DTC500 Series Card Printer/Encoders User Guide (Rev. 5.0)

- DTC510 (Single-Sided Card Printer/Encoders)
- DTC515 (Single-Sided Card Printer/Encoders)
- DTC515-LC (Single-Sided Card Printer/Encoders)
- DTC520 (Dual-Sided Card Printer/Encoders)
- DTC525 (Dual-Sided Card Printer/Encoders)
- DTC525-LC (Dual-Sided Card Printer/Encoders)

Part Number: L000699

DTC500 Series Card Printer/Encoders User Guide (Rev. 5.0), property of FARGO Electronics, Incorporated

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The revision number for this document will be updated to reflect changes, corrections, updates and enhancements to this document.

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Revision 5.0	1 January 2004	DTC500 Card Printer/Encoders User Guide (Rev. 5.0)

These reference documents were thoroughly reviewed to provide FARGO with professional and international standards, requirements, guidelines and models for our technical, training and user documentation. At all times, the *Copyright Protection Notice* for each document was adhered to within our FARGO documentation process. This reference to other documents does not imply that FARGO is an ISO-certified company at this time.

- ANSI/ISO/ASQ Q9001-2000 American National Standard, (sub-title) Quality Management Systems - Requirements (published by the American Society of Quality, Quality Press, P.O. Box 3005, Milwaukee, Wisconsin 53201-3005)
- The ASQ ISO 9000:2000 Handbook (editors, Charles A. Cianfrani, Joseph J. Tsiakals and John E. West; Second Edition; published by the American Society of Quality, Quality Press, 600 N. Plankinton Avenue, Milwaukee, Wisconsin 53203)
- Juran's Quality Handbook (editors, Joseph M. Juran and A. Blanton Godfrey; Fifth Edition, McGraw-Hill)

Any questions regarding changes, corrections, updates or enhancements to this document should be forwarded to:

FARGO Electronics, Incorporated
Support Services
6533 Flying Cloud Drive
Eden Prairie, MN 55344 (USA)
(952) 941-9470
(800) 459-5636
FAX: (952) 941-7836
www.fargo.com
E-mail: sales@fargo.com

Reviewing the DTC500 Series Printers Overview table

DTC500 Series	Input Hoppers	Card Capacity	Security	Encoding Modules	Lamination Module
DTC510 (Single-Sided Card Printer/Encoders)	1	100	N/A	Optional	N/A
DTC515 (Single-Sided Card Printer/Encoders)	2	200	Included	Optional	Optional
DTC515-LC (Single-Sided Card Printer/Encoders)	2	200	Included	Optional	Included
DTC520 (Dual-Sided Card Printer/Encoders)	2	100	N/A	Optional	N/A
DTC525 (Dual-Sided Card Printer/Encoders)	2	200	Included	Optional	Optional
DTC525-LC (Dual-Sided Card Printer/Encoders)	2	200	Included	Optional	Included

How to use the manual

The DTC500 Series Card Printer/Encoders User Guide (Rev. 5.0) is, in fact, the troubleshooting and field service manual for the entire DTC500 card printer. The manual is designed to provide Installers and Technicians with quick, efficient lookup of related procedures, components and terms. The manual can be used effectively either in soft or hard copy, depending on the preference of the Installer or Technician.

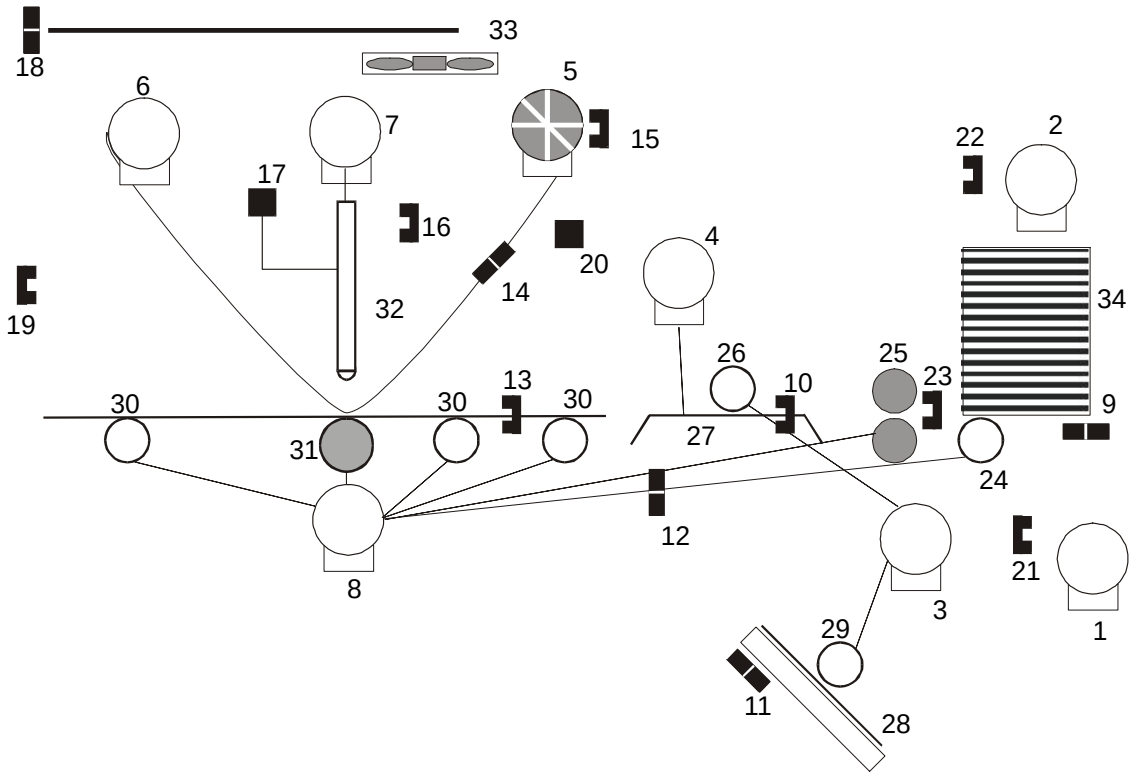
Manual	**Description**
Sequence of Operations, Glossary of Terms and Technical/Functional Specifications (hyper-linked)	You can go directly to the Sequence of Operations, Glossary of Terms, Technical Specifications and Functional Specifications to learn how to use the processes, procedures, functions and windows for the DTC500 Card Printer/Encoders within concise, correlative tables.
Table of Contents (hyper-linked)	You can use the Table of Contents to quickly locate, for example a procedure, the index or an appendix.
Troubleshooting, Replacement, Removal, Diagnostic and Navigation Procedures (in hyper-linked Sections)	You can go directly to Specifications, General Troubleshooting, Printer Adjustments, Parts Replacement, Printer Packing, Board Level Diagnostics, LCD On-Line Menu Navigation and Firmware Updates to find troubleshooting, removal and replacement procedures. The section titles are always labeled according to their function for consistent usage.
Cross-Referencing (hyper-linked)	You can use the cross-referencing links to quickly locate an error message or a procedure.
Comprehensive Index (hyper-linked)	You can use the Comprehensive Index to quickly locate information on the DTC500 Card Printer/Encoders, relating to a specification, a procedural step, a window or screen, a component, a term, a qualifier or a related feature to this printer.

Safety Messages (review carefully)

Symbol	Critical Instructions for Safety purposes
Danger:	**Failure to follow these installation guidelines can result in death or serious injury.** Information that raises potential safety issues is indicated by a warning symbol (as shown to the below). • **To prevent personal injury**, refer to the following safety messages before performing an operation preceded by this symbol. • **To prevent personal injury**, always remove the power cord prior to performing repair procedures, unless otherwise specified. • **To prevent personal injury**, make sure only qualified personnel perform these procedures.
Caution:	**This device is electrostatically sensitive. It may be damaged if exposed to static electricity discharges.** Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below). • **To prevent equipment or media damage**, refer to the following safety messages before performing an operation preceded by this symbol. • **To prevent equipment or media damage**, observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the Circuit Board and Printhead Assemblies. • **To prevent equipment or media damage**, always wear an appropriate personal grounding device (e.g., a high quality wrist strap grounded to avoid potential damage). • **To prevent equipment or media damage**, always remove the Ribbon and Cards from the printer before making any repairs, unless otherwise specified. • **To prevent equipment or media damage**, take jewelry off of fingers and hands, as well as thoroughly clean hands to remove oil and debris before working on the printer.

DTC500 Card Printer/Encoders Overview

Reviewing the DTC500 Block Diagram



Motors	
1	Hopper Lift
2	Hopper Transport
3	Encoding/Flipper Feed
4	Flipper Stepper
5	Ribbon Supply
6	Ribbon Take-up
7	Headlift
8	Card Feed Stepper

Sensors	
13	Card Detection
14	Flipper Table Card
15	Encoding TOF
16	Flipper Home
17	Print TOF
18	Ribbon Sensor Array
19	Ribbon Encoder
20	Print Headlift
21	Thermistor
22	Cover Interlock
23	Release Lever
24	RFID
25	Hopper Lift
26	Hopper Transport
27	Card Feed

Parts	
24	Card Input Roller
25	Cleaning Cartridge
26	Flipper Table Roller
27	Flipper Table
28	Encoding Module
29	Encoding Feed Roller
30	Card Feed Roller
31	Platen Roller
32	Printhead
33	Printhead Cooling Fan
34	Card Input Hopper

Reviewing DTC 525 Sequence of Operations

The following sequence describes a DTC525 doing a dual sided full color print job with magnetic encoding.

Step	Process
1	The File information is received from the PC.
2	The Flipper Stepper activates and rotates the Flipper Table until the Flipper Home Sensor is activated.
3	The Flipper Stepper rotates the Flipper Table back a specific number of steps (based on the Flipper Offset setting) to return the Flipper Table to a level position.
4	The Card Detection Sensor detects the presence of a Card in the exception feed.
5	The Hopper Lift Motor activates and lowers the Card Hopper until the Hopper Lift Sensor detects a change in state.
6	The Card Detection Sensor detects the presence of a Card. If no card is seen, the following takes place: a. The Hopper Lift Motor activates and raises the Card Hopper until the Hopper Lift Sensor detects a change in state. b. The Hopper Transport Motor activates and moves to the other Hopper until the Hopper Position Sensor detects a change in state. c. The Hopper Lift Motor activates and lowers the card Hopper until the Hopper Lift Sensor is activated. d. The Card Detection Sensor detects the presence of a Card.
7	The Card Feed Stepper activates and feeds a card through the Cleaning Roller and onto the Flipper Table.
8	The Flipper Stepper rotates the Flipper Table a certain number of steps (based on the Encoder Angle setting) to position the card for Encoding.
9	The Encoder/Flipper Feed Motor activates until the Card passes the Encoding TOF Sensor.
10	The Encoding Feed Motor feeds the Card back to the Flipper Table while the Magnetic Encoding Head transfers data onto the Magnetic Stripe.

Continued on the next page

Reviewing DTC 525 Sequence of Operations (continued)

Step	Process
11	Repeat Steps 9 to 10 for each Encoding and Verification pass.
12	The Card is centered on the Flipper Table based on input from the Flipper Table Card Sensor.
13	The Flipper Stepper rotates the Flipper Table a specific number of steps (based on the Flipper Offset setting) to the Home the Flipper Table.
14	The Card Feed Motor feeds the Card to the Print TOF Sensor.
15	The Ribbon Drives turn ON and move until the correct panel is found by the Print Ribbon Sensor Array (5 reflective). All Stop. (**Note:** The Print Ribbon Encoder is active during this step.)
16	The Headlift Motor engages and moves the printhead down until the Headlift Sensor is activated. All Stop.
17	The Fan turns ON (as required) and blows cool air over the Printhead. (**Note:** The Printhead Thermistor determinates the Printhead Temperature.)
18	Ribbon Drive and Card feed Motors activate and the printhead burns image data until the image data is depleted. All Stop. (**Note:** The Ribbon Encoder is active during this step.)
19	The Headlift Motor engages, moving the printhead up until the Headlift Sensor is activated. All Stop.
20	The Card Feed Motor feeds the Card back to the Print TOF Sensor.
21	Repeat steps 14 to 20 for the appropriate Number of Color/Overlay Panels.
22	The Card Feed Motor transports the Card back to the Flipper Table.
23	The Flipper Stepper rotates in order to invert the Card.
24	The Card Feed Motor activates and moves the card to the Print TOF Sensor. All Stop.
25	The Flipper Stepper rotates to return the Flipper Table to a level position.
26	Repeat Steps 14 to 20 for the appropriate Number of Color/Overlay Panels.
27	The Card Feed Motor activates to feed the Card out of the Printer.

Reviewing DTC 520 Sequence of Operations

The following sequence describes a DTC525 doing a dual sided full color print job with magnetic encoding.

Step	Process
1	The File information is received from the PC.
2	The Flipper Stepper activates and rotates the Flipper Table until the Flipper Home Sensor detects a change in state.
3	The Flipper Stepper rotates the Flipper Table back a specific number of steps (based on the Flipper Offset setting) to return the Flipper Table to a level position.
4	The Card Detection Sensor detects for the presence of a Card in the exception feed.
5	The Hopper Lift Motor activates and lowers the Card Hopper until the Hopper Lift Sensor detects a change in state.
6	The Card Detection Sensor detects the presence of a Card.
7	The Card Feed Stepper activates and feeds a card through the Cleaning Roller and onto the Flipper Table.
8	The Flipper Stepper rotates the Flipper Table a specific number of steps (based on the Encoder Angle setting) to position the card for Encoding.
9	The Encoder/Flipper Feed Motor activates until the Card passes the Encoding TOF Sensor.
10	The Encoding Feed Motor feeds the Card back to the Flipper Table while the Magnetic Encoding Head transfers data onto the Magnetic Stripe.
11	Repeat Steps 9 to 10 for each Encoding and Verification pass.
12	The Card is centered on the Flipper Table based on input from the Flipper Table Card Sensor.

Continued on the next page

Reviewing DTC 520 Sequence of Operations (continued)

13	Flipper Stepper rotates the Flipper Table a certain number of steps (based on the Flipper Offset setting) to return the Flipper Table to a level position.
14	The Card Feed Motor feeds the Card to the Print TOF Sensor.
15	The Ribbon Drives turn ON and move until the correct panel is detected by the Print Ribbon Sensor Array (5 reflective). All Stop. (**Note:** The Print Ribbon Encoder is active during this step.)
16	The Headlift Motor engages and moves the Printhead down until the Headlift Sensor detects a change in state. All Stop.
17	The Fan turns ON (as required) and blows cool air on the Printhead. (**Note:** The Printhead Thermistor determines the Printhead Temperature.)
18	Ribbon Drive and Card feed Motors activate and the printhead burns image data until the image data is depleted. All Stop. (**Note:** The Ribbon Encoder is active during this step.)
19	The Headlift Motor engages, moving the printhead up until the Headlift Sensor is activated. All Stop.
20	The Card Feed Motor feeds the Card back to the Print TOF Sensor.
21	Repeat Steps 14 to 20 for the appropriate Number of Color/Overlay Panels.
22	The Card Feed Motor transports the Card back to the Flipper Table.
23	The Flipper Stepper rotates to invert the Card.
24	The Card Feed Motor activates and moves the Card to the Print TOF Sensor. All Stop.
25	The Flipper Stepper rotates to return the Flipper Table to a level position.
26	Repeat steps 14 to 20 for the appropriate Number of Color/Overlay Panels.
27	The Card Feed Motor activates to feed the Card out of the Printer.

Reviewing DTC 515 Sequence of Operations

The following sequence describes a DTC515 doing a full color print job with magnetic encoding.

Step	Process
1	The File information is received from the PC.
2	The Flipper Stepper activates and rotates the Flipper Table until the Flipper Home Sensor detects a change in state.
3	The Flipper Stepper rotates the Flipper Table back a specific number of steps (based on the Flipper Offset setting) to return the Flipper Table to a level position.
4	The Card Detection Sensor detects for the presence of a Card in the exception feed.
5	The Hopper Lift Motor activates and lowers the Card Hopper until the Hopper Lift Sensor detects a change in state.
6	Card detection sensor detects for the presence of a card. If no card is seen, the following takes place: a. The Hopper Lift Motor activates and raises the card Hopper until the Hopper Lift Sensor detects a change in state. b. The Hopper Transport motor activates and move to the other Hopper until the Hopper Position Sensor detects a change in state. c. The Hopper Lift Motor activates and lowers the Card Hopper until the Hopper Lift Sensor detects a change in state. d. The Card Detection Sensor detects for the presence of a Card.
7	The Card Feed Stepper activates and feeds a Card through the Cleaning Roller and onto the Flipper Table.
8	The Flipper Stepper rotates the Flipper Table a specific number of steps (based on the Encoder Angle setting) to position the Card for Encoding.
9	The Encoder/Flipper Feed Motor activates until the Card passes the Encoding TOF Sensor.
10	The Encoding Feed Motor feeds the Card back to the Flipper Table while the Magnetic Encoding Head transfers the data onto the Magnetic Stripe.

Continued on the next page

Reviewing DTC 515 Sequence of Operations (continued)

Step	Process
11	Repeat Steps 9 to 10 for each Encoding and Verification pass.
12	The Card is centered on the Flipper Table based on input from the Flipper Table Card Sensor.
13	The Flipper Stepper rotates the Flipper Table a certain number of steps (based on the Flipper Offset setting) to return the Flipper Table to a level position.
14	The Card Feed Motor feeds card to the Print TOF Sensor.
15	The Ribbon Drives turn ON and move until the correct panel is found by the Print Ribbon Sensor Array (5 reflective). All Stop. (**Note:** The Print Ribbon Encoder is active during this step.)
16	The Headlift Motor engages and moves the Printhead down until the Headlift Sensor is activated. All Stop.
17	The Fan turns ON (as required) and blows cool air on the Printhead. (**Note:** The Printhead Thermistor determines the Printhead Temperature.)
18	The Ribbon Drive and Card Feed Motors activate and the Printhead burns the image data until the image data is depleted. All Stop. (**Note:** The Ribbon Encoder is active during this step.)
19	The Headlift Motor engages and moves the Printhead up until the Headlift Sensor detects a change in state. All Stop.
20	The Card Feed Motor feeds the Card back to the Print TOF Sensor.
21	Repeat Steps 14 to 20 for the appropriate Number of Color/Overlay Panels.
22	The Card Feed Motor activates to feed the Card out of the Printer.

Reviewing DTC 510 Sequence of Operations

The following sequence describes a DTC510 doing a full color print job with magnetic encoding.

Step	Process
1	The File information is received from the PC.
2	The Flipper Stepper activates and rotates the Flipper Table until the Flipper Home Sensor detects a change in state.
3	The Flipper Stepper rotates the Flipper Table back a specific number of steps (Based on the Flipper Offset setting) to return the Flipper Table to a level position.
4	The Card Detection Sensor detects the presence of a Card in the exception feed.
5	The Hopper Lift Motor activates and lowers the Card Hopper until the Hopper Lift Sensor detects a change in state.
6	The Card Detection Sensor detects for the presence of a card.
7	The Card Feed Stepper activates and feeds a Card through the Cleaning Roller and onto the Flipper Table.
8	The Flipper Stepper rotates the Flipper Table a specific number of steps (based on the Encoder Angle setting) to position the card for Encoding.
9	The Encoder/Flipper Feed Motor activates until the card passes the Encoding TOF Sensor.
10	The Encoding Feed Motor feeds card back to the flipper table while the Magnetic Encoding Head transfers data onto the Magnetic Stripe.
11	Repeat Steps 9 to 10 for each encoding/verification pass.
12	The Card is centered on the Flipper Table based on input from the Flipper Table Card Sensor.

Continued on the next page

Reviewing DTC 510 Sequence of Operations (continued)

Step	Process
13	The Flipper Stepper rotates the Flipper Table a specific number of steps (based on the Flipper Offset setting) to return the Flipper Table to a level position.
14	The Card Feed Motor feeds card to the Print TOF Sensor.
15	The Ribbon Drives turn ON and move until the correct panel is found by the Print Ribbon Sensor Array (5 reflective). All Stop. (**Note:** The Print Ribbon Encoder is active during this step.)
16	The Headlift Motor engages and moves the Printhead down until the Headlift Sensor is activated. All Stop.
17	The Fan turns ON (as required) and blows cool air over the Printhead. (**Note:** The Printhead Thermistor determines the Printhead Temperature.)
18	The Ribbon Drive and Card Feed Motors activate and the Printhead burns the image data until the image data is depleted. All Stop. (**Note:** The Ribbon Encoder is active during this step.)
19	The Headlift Motor engages and moves the Printhead up until the Headlift Sensor is activated. All Stop.
20	The Card Feed Motor feeds card back to the Print TOF Sensor.
21	Repeat steps 14 to 20 for the appropriate Number of Color/Overlay Panels.
22	The Card Feed Motor activates to feed the Card out of the Printer.

Reviewing DTC500 Boot up Sequence

Step	Process
1	The Printer checks the installed memory in the Printer.
2	The Printers Firmware is initialized.
3	The Headlift Motor activates and cycles the Printhead one full rotation.
4	The Encoding Feed Motor activates and the Magnetic TOF Sensor checks for the presence of a Card.
4	The Hopper Transport Motor activates until the Hopper Position Sensor detects a change in state.
5	The Print Ribbon moves forward until it finds the panel, pauses, advances to magenta, then backs up to yellow (where the Ribbon Sensor detects marks in the ribbon.
6	The Hopper Lift Motor activates and raises the Hopper until the Hopper Lift Sensor detects a change in state.
7	The Card Feed Motor activates to clear any Cards from the Card path.

Reviewing the Lamination Module Sequence of Operations

The LAM sequence of operations begins after printing has occurred with the Card Printer.

Step	Process
1	The card is fed onto the Lamination Module Flipper Table.
2	The card is fed to the Card Position Sensor.
3	The Lamination Ribbon Motor begins cycling until the Upper Lamination Sensor detects the mark.
4	The Card Feed Motor activates to center the card on the Platen Roller.
5	The Lamination Roller Lift Motor cycles until the Lamination Roller Lift Sensor detects state change.

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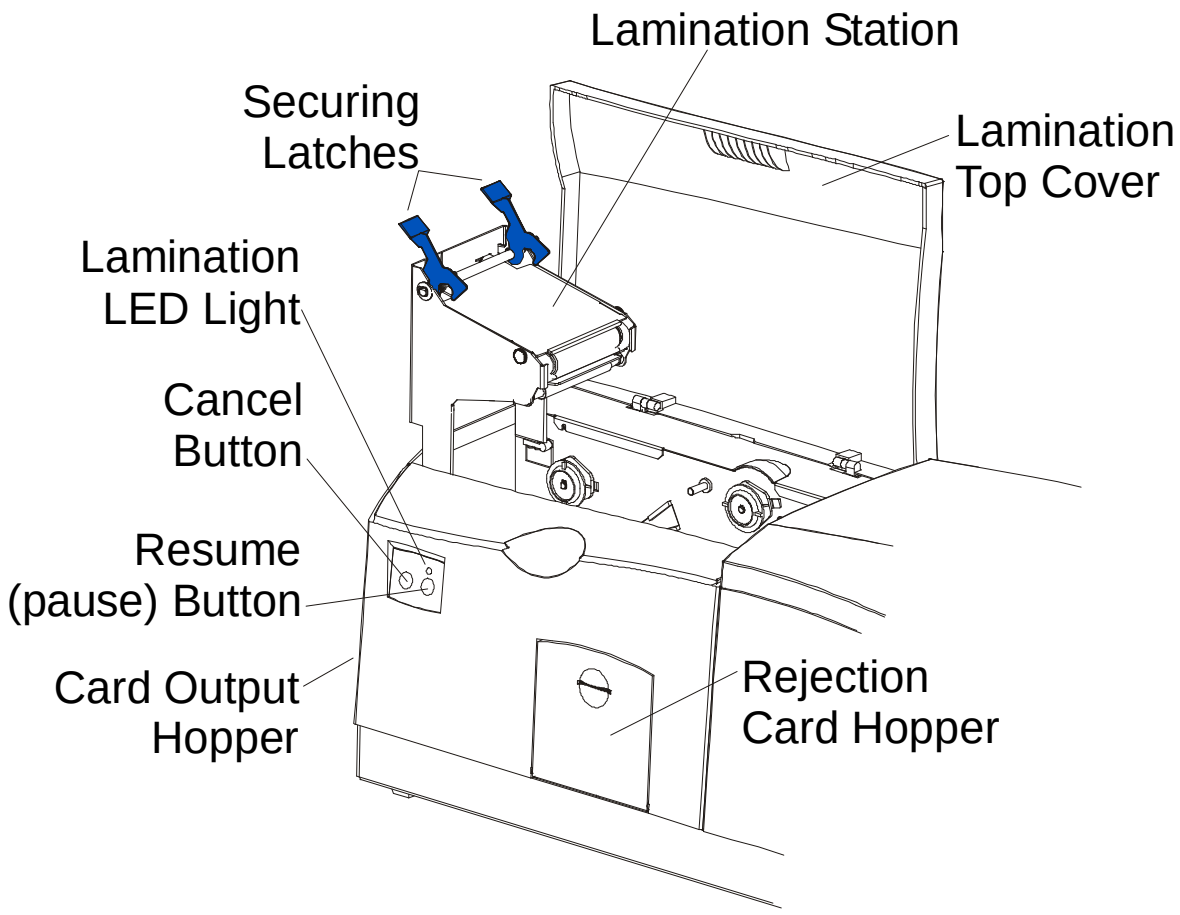

Reviewing the Lamination Module Sequence of Operations (continued)

Step	Process
6	The Card Feed Motor and the Lamination Ribbon Motor activate for the length of the card.
7	The Lamination Roller Lift Motor cycles until Lamination Roller Lift Sensor detects state change.
8	The card is fed back to the Flipper Table.
9	The Flipper Table Clutch engages.
10	The Flipper Table Motor activates until the Card is inverted based on the Flipper offset setting.
11	The Flipper Table Clutch disengages.
12	The card is fed off the Flipper Table.
13	The Flipper Table Clutch engages.
14	The Flipper Table Motor activates until the Flipper Table is homed.
15	The Flipper Table Clutch disengages.
16	Repeat Steps 2 through 7.
17	The card is fed out of the Printer.

Reviewing Lamination Module Boot up Sequence

Step	Process
1	The Lamination Headlift turns until head up position is returned from Headlift Sensor.
2	The Lamination Ribbon motor activates to determine the presence of a roll of lamination.
3	The Lamination Flipper table homes itself.
4	The Card sensor checks for the presence of a card and ejects it if found.

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Section 1: Specifications

The purpose of this section is to provide the User with specific information on the Regulatory Compliances, Agency Listings, Technical Specifications and Functional Specifications for the DTC500 Series Card Printer/Encoders User Guide (Rev. 5.0).

Reviewing the DTC500 Series Printers Overview table

DTC500 Series	Input Hoppers	Card Capacity	Security	Encoding Modules	Lamination Module
DTC510 (Single-Sided Card Printer/Encoders)	1	100	N/A	Optional	N/A
DTC515 (Single-Sided Card Printer/Encoders)	2	200	Included	Optional	Optional
DTC515-LC (Single-Sided Card Printer/Encoders)	2	200	Included	Optional	Included
DTC520 (Dual-Sided Card Printer/Encoders)	2	100	N/A	Optional	N/A
DTC525 (Dual-Sided Card Printer/Encoders)	2	200	Included	Optional	Optional
DTC525-LC (Dual-Sided Card Printer/Encoders)	2	200	Included	Optional	Included

Regulatory Compliances

Term	Description
CSA	The Printer manufacturer has been authorized by UL to represent the Card Printer as CSA Certified under CSA Standard 22.2. **File Number:** E145118
FCC	The Card Printer complies with the requirements in Part 15 of the FCC rules for a Class B digital device. (**Note:** These requirements are designed to provide reasonable protection against harmful interference in a residential installation.) If equipment operation in a residential area causes unacceptable interference to radio and TV reception, the operator is required to take whatever steps are necessary to correct the interference.
ITS-EMC	The Card Printer has been tested and complies with EN55022 Class B: 1995 and EN82082-1: 1997 standards for EMI emissions. (**Note:** Based on the above testing, the Printer manufacturer certifies that the Card Printer complies with all current EMC directives of the European Community and has placed the CE mark on the Card Printer.) **License Number:** J99032510
TÜV-GS	The Card Printer has been tested and complies with IEC950 and bears the TÜV-GS mark. **License Number:** S9971826
UL	The Card Printer is listed under UL 1950 INFORMATION TECHNOLOGY EQUIPMENT. **File Number:** E145118, Volume 1, Section 15

Agency Listings

Term	Description
Emissions Standards	EMC: ITS (EN 55022 Class B:1995), FCC Class B, EN 50082-1:1997, BSMI, CRC c1374, CE and CCIB
Safety Standards	UL 1950, CSA C2.2 (No.950-95) and TüV-GS (IEC-950), CE and CCIB.

Technical Specifications

Term	Description
Accepted Standard Card Size	**CR-79 Adhesive Back:** 3.303 in. x 2.051 in. (83.9mm x 52.1mm) (cannot be laminated with DTC515-LC or DTC525-LC) **CR-80:** 3.375 in. x 2.125 in. (85.6mm x 54mm) (corresponds to ID1)
Accepted Card Thickness	.010 in. (10 mil) to .050 in. (50 mil) (.254mm to 1.27mm); unless laminating.
Accepted Card Types	HID Proximity Cards, Mifare Contactless Smart Cards and Contact Smart Cards
Accepted Card Compositions	PVC or polyester cards with polished PVC finish; monochrome resin required for 100% polyester cards.
Barcodes	Code 39, Code 128 B & C with and without check digit (available with embedded font and bar code option): 2 of 5, UPC-A, EAN 13 and PDF-417 2D bar code and other symbologies (available via Windows driver).
Card Input Hopper Capacity	• **DTC510/520:** Single-stack hopper, 100 cards (30 mil); auto or manual feed • **DTC515/525:** Dual-stack hopper, 200 cards (30 mil); auto or manual feed • **DTC515-LC/525-LC:** Dual Hopper; 200 cards (.030”); auto or manual feed
Card Output Hopper Capacity	100 cards (30 mil)

Continued on the next page

Technical Specifications (continued)

Term	Description
Card Cleaning	Removable card cleaning cartridge with replaceable cleaning tape.
Colors	Up to 16.7 million colors and 256 shades per pixel.
Dimensions	DTC510/515/520/525: 10.75 in. H x 18.5 in. W x 11 in. D (273mm x 470mm x 279mmD). DTC515-LC/525-LC: 10.75 in. H x 30.5 in. W x 11 in. D (273mm x 775mm x 279mmD). LC Module: 10.25” H x 30” W x 11”D/260mm H x 762mm W x 279mmD
Display	SmartScreen LCD Control Panel; LED display on Card Lamination Module.
Fonts	Resident Swiss Bold 8, 10, 12, 14, 16, 18 and 22 are available with embedded font and bar code option. TrueType fonts are available via the Windows driver.
Humidity	20% to 80% Non-Condensing.
Interface	• Centronics Parallel, IEEE 1284 compliant • Optional EIA-232C serial interface (for embedded fonts and bar codes option) • Optional USB-to-Parallel Interface Cable (Windows 98/Me/2000/XP)
Memory	4 MB RAM
Operating Temperature	65ºF to 80ºF (18ºC to 27ºC).
Print Area	**CR-80 edge-to-edge:** (3.37 in. x 2.12 in./85.5mm x 53.5mm) **CR-79:** (3.3 in. x 2.051 in./83.8mm x 52.1mm)

Continued on the next page

Technical Specifications (continued)

Term	Description
Print Speed – Batch Mode	• **DTC510/515:** 7 seconds per card/514 cards per hour (K)* • **DTC510/515:** 12 seconds per card/300 cards per hour (BO)* • **DTC510/515:** 27 seconds per card/133 cards per hour (YMCKO)* • **DTC520/525:** 35 seconds per card/102 cards per hour (YMCKOK)* • **DTC515-LC/525-LC:** 30 seconds per card/133 cards per hour (YMCK/lamination)* • **DTC525-LC:** 36 seconds per card /102 cards per hour (YMCKK/lamination)* *Indicates the print Ribbon type and the number of Ribbon panels printed where Y=Yellow, M=Magenta, C=Cyan, K=Resin Black, B=Dye-Sublimation Black and O=Overlay. • Print speeds do not include the time needed for the PC to process the image. • Process time is dependent on the size of the file, the CPU, amount of RAM and the amount of available resources at the time of the print. • Print speed indicates an approximate batch print speed and is measured from the time a card feeds into the Printer to the time it ejects from the Printer. (**Note:** The single card print speeds will be slower than the batch print speeds listed above since batch print speed is enhanced by the Printer's multi-tasking capabilities when printing multiple cards in succession.)
Printing Method	Dye-Sublimation/Resin Thermal Transfer.
Overlaminate Options (for LC)	Thermal Transfer Overlaminate, .25 mil thick PolyGuard Overlaminate, 1.0 mil and .6 mil thick All overlaminates available in clear, holographic globe design or custom holographic design

Continued on the next page

Technical Specifications (continued)

Term	Description
Options	• Printer Cleaning Kit • External Print Server (Windows only; required for stand-alone networking of printer/encoders) • Card Lamination Module (DTC515 and DTC525 only) • Embedded Fonts and Bar Codes to print from AS/400, mainframe and other systems o Code 39, Code 128 B & C with and without check digit o 2 of 5 o UPC-A o EAN 13 o PDF-417 2D bar code and other symbologies available via Windows driver o Resident: Swiss Bold 8, 10, 12, 14, 16, 18 and 22
Encoding Options	• ISO Magnetic Stripe Encoding Module, dual high- and low-coercivity, Tracks 1, 2 and 3 • JIS II Magnetic Stripe Encoding Module • E-Card Docking Station (required for all e-card options or 3rd party Smart card encoding) • Contactless Smart Card Encoder (MIFARE®) • Contact Smart Card Encoder reads from and writes to all ISO7816-1/2/3/4 memory and microprocessor smart cards (T=0, T=1) as well as synchronous cards • Prox Card Encoder (HID read-only); I class
Fargo Certified Supplies	Fargo Card Printer/Encoders require highly specialized media to function properly. To maximize printed card quality, printhead life and printer/encoder reliability, use only Fargo Certified Supplies. Fargo warranties are void, where not prohibited by law, when non-Fargo Certified Supplies are used.
Printing Resolution	Up to 16.7 million colors and 256 shades per pixel. 300 dpi (11.8 dots/mm)

Continued on the next page

Technical Specifications (continued)

Term	Description
Print Ribbon options	• Full Color with resin black and overlay panel, YMCKO, 400 prints • Full Color with two resin black panels and overlay panel, YMCKOK, 350 prints • Full Color, no resin black, no overlay panel, YMC, 700 prints, must be used with overlaminate • Full Color with resin black, no overlay panel, YMCK, 500 prints, must be used with overlaminate • Full Color with 2 resin black panels, no overlay panel, YMCKK, 400 prints, must be used with overlaminate • Dye-Sublimation black, BO, 500 prints • Resin black, green, blue, red, white, silver, gold, scratch-off, 1000 prints
Security Features	SmartGuard, SmartShield, Card Hopper Lock (available only on DTC515/525/515-LC/525-LC)
Software Drivers	Windows 95/ 98/ ME/ NT/ 2000/XP; Optional Macintosh® (not available on the DTC515-LC/525-LC).
Supply Voltage	• DTC510/515/520: 100-240 VAC, 1.2A • DTC525/515-LC/525-LC: 100-240 VAC, 2.2A
Supply Frequency	50 Hz/60 Hz.
System Requirements	IBM-PC or compatible. Windows 95/ 98/ ME/ NT/ 2000/XP. Pentium™ class 133 MHz computer with 32 MB of RAM or higher, 200 MB free hard disk space or higher and ECP Parallel Port with DMA access.
Warranty	Printer – One year; optional Extended Warranty Program (U.S. only) Printhead – One year, unlimited pass with UltraCard™ Cards
Weight	DTC510/515/520/525: 24 lbs. (10.8 kg). DTC515-LC/DTC525-LC: 43 lbs./19.5kg LC Module: 19 lbs./8.6 kg.

Functional Specifications

The card Printer utilizes two different, yet closely related printing technologies to achieve its direct-to-card print quality for Dye-Sublimation and resin thermal transfer. The card Printer will print from any IBM-PC® or compatible running Windows® 95/98/Me, Windows NT 4.0, Windows 2000 or Windows XP.

The following describes how each of these technologies works:

Function	Description
Dye-Sublimation	Dye-Sublimation is the print method the card Printer uses to produce smooth, continuous-tone images that look photographic. (**Note:** This process uses a dye-based Ribbon roll that is partitioned by a number of consecutive color panels.) • **Process Colors:** The panels are grouped in a repeating Series of three process colors - yellow, magenta and cyan (YMC), along the entire length of the print Ribbon. • **Panels:** The Printer always prints the yellow panel first, followed by the magenta panel and the cyan panel. • **Printhead:** As the print Ribbon passes beneath the Printhead, hundreds of thermal elements within the Printhead heat the dyes on the Ribbon. (**Note:** When these dyes are heated, they vaporize and diffuse into the surface of the card. A separate pass is made for each of the three color panels on the Ribbon.) • **Color Shades:** By combining the colors of each panel and by varying the heat used to transfer these colors, it is possible to print up to 16.7 million different shades of color. (**Note:** This blends one color smoothly into the next, producing photo-quality images with absolutely no dot pattern.) • **Dye-Diffusion Thermal Transfer:** It is the process of heating a dye suspended in a cellulous substrate until the dye can flow, diffusing into the dye receptive surface of the card or InTM. This produces the image in the surface of the card.

Continued on the next page

Functional Specifications (continued)

Function	Description
Resin Thermal Transfer	Resin Thermal Transfer is the print method the Printer uses to print sharp black text and crisp bar codes that can be read by both infrared and visible-light bar code scanners. Like Dye-Sublimation, this process uses the same thermal Printhead to transfer color to a card from a resin-only print Ribbon or the resin black (K) panel of a full color print Ribbon. The difference, however, is that solid dots of resin-based ink are transferred and fused to the surface of the card. (**Note:** This produces very durable, saturated printing.)

Continued on the next page

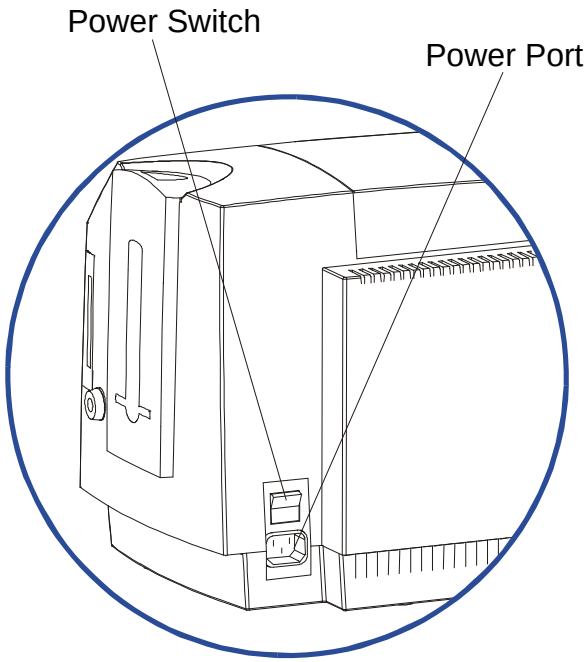
Printer Components: LCD display to Parallel Interface Port

Component	Description
Access Card Slot	The SmartGuard Access Card is inserted in this slot and is used with the Printer's optional SmartGuard Security Feature.
Card Thickness Adjustment Lever	Adjusts the Printer to feed varying card thicknesses.
Card Cleaning Cartridge	Automatically cleans cards for higher print quality. (**Note:** Replace this tape after every 3000 cards or as needed.)
Card Input Hopper	Load blank cards into this hopper.
Card Output Hopper	Stores printed cards; up to 100, 30 mil cards.
Card Supply Window	Check the current card supply at-a-glance, without having to open the Card Hopper Door.
Card Input Hopper Lock	• If using the DTC515 or DTC525 Card Printer, this lock allows you to lock the Card Input Hopper Door to help prevent the theft of blank cards. • If using the DTC510 or DTC520 Card Printers, this lock is not available.
Exception Card Slot	Insert a single exception card into this slot if you would like to print onto a card other than those loaded in the Card Input Hopper.
LCD display	Displays the current status of the Printer.
LED light	Indicates Printer ON, OFF, pause and error conditions.

Continued on the next page

Printer Components: LCD display to Serial Interface Port (continued)

Component	Description
Printhead	This Print Station component actually does the printing. (**Note:** This component is fragile and must not be bumped or touched with anything other than a cleaning pen.)
Power Switch	This switch turns the Printer power ON and OFF.
Power Port	This port connects to the (included) power cord.
Securing Latches	These latches lock the Print Station securely in place when closed.
Softkey Buttons	The button function is displayed above the button. The buttons change depending upon the Printer's mode of operation.



Printer Components: LCD display to Serial Interface Port (continued)

Component	Description
scroll buttons	These buttons are used to scroll through menus and sub-menus and to adjust certain menu options.
Parallel Interface Port	This port connects to a Windows PC with a parallel cable.
Serial Interface Port	**For Smart Card option:** This port is provided only if your Printer includes an optional Smart Card Contact Station.
Serial Interface Port	**For Embedded Fonts and Bar Codes option:** This port is provided only if your Printer includes optional embedded fonts and bar codes support.

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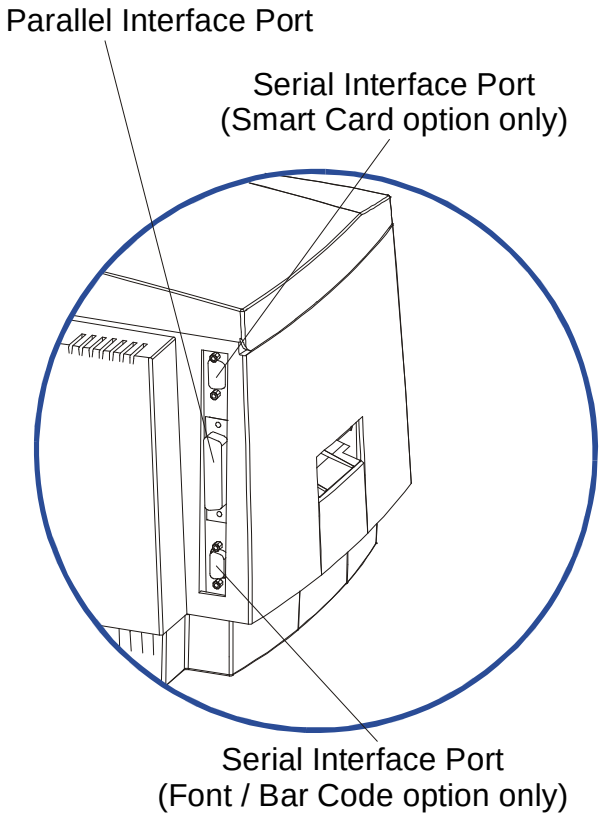
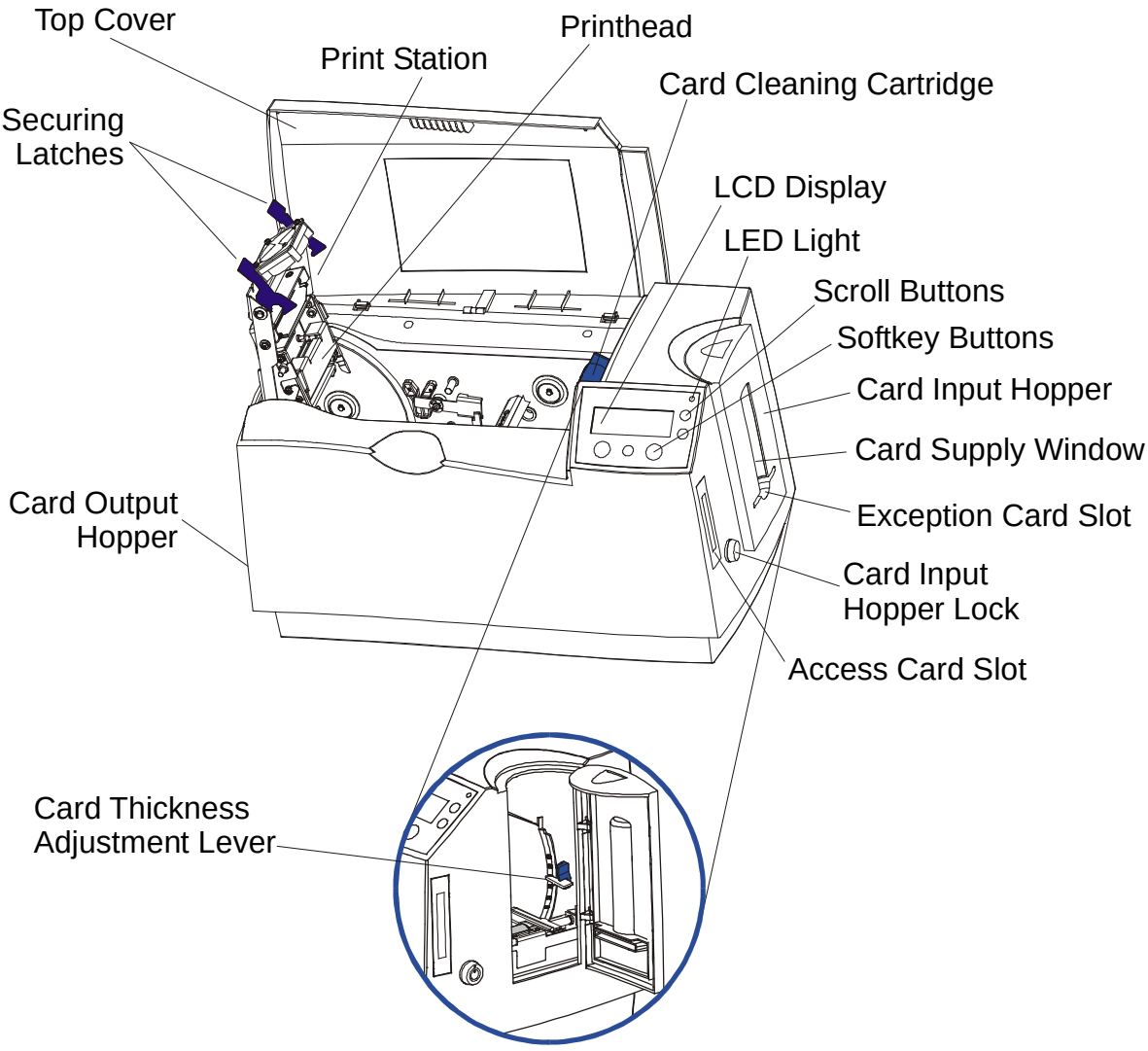


Printer Components: LCD display to Serial Interface Port (continued)

Refer to the previous table.



Printer Components: LCD and Softkey Control Pad

The Printer provides a four line, eighty (80) character LCD display that communicates helpful information about the Printer's operation.

- The top three lines of the LCD display will always be used to communicate print status, error messages and menu options.
- The bottom line of the LCD display will always be used to communicate the current function of the Printer's softkey buttons.

This section describes how the LCD display and Softkey Control Pad work together.

Component	Description
Softkey Buttons	The Printer has three **softkey buttons** that appear below the LCD display. (**Note:** Their current function is indicated by the words appearing above them. This function will change according to the Printer's current mode of operation.) • Press the corresponding softkey button for the correct selection. (**Note:** If no word appears above a particular button, this indicates it has no function in that particular mode of operation.) • Use the scroll buttons to scroll through help text, to navigate through the Printer's menus and to adjust certain Printer settings. (**Note:** The Printer has scroll buttons on its control pad located just to the right of the LCD display.) • If scrolling through a list, this symbol will change to ▲ if you have reached the bottom of the list or ▼ if you have reached the top.
LCD display	The Printer's LCD display will change according to the Printer's current mode of operation.
System Check Screens	When the Printer is first powered ON, the Printer's system check screens will briefly appear to: • Display and test the amount of installed Printer memory. • Align the print Ribbon. • Display the READY screen and current Firmware version.

Continued on the next page

Printer Components: LCD and Softkey Control Pad (continued)

Component	Description
Ready/Printer Open Screens	Once the Printer has finished its system check and with the Print and Transfer Stations closed, the Printer will display READY to indicate that the Printer is ready for operation. (**Note:** The Printer will stay in this mode until it receives a print job or it is turned OFF.) If the Top cover and Printhead Arm are opened, the Printer Open screen will appear. • Press either the **Forward** or **Back** buttons to move the Printer's card path Rollers in the indicated direction. In any of these screens, the Printer will always display the **Menu** option above the center softkey button. • Press this button to access the Printer's menu options. (**Note:** The **Menu** option is available only in the Ready/Printer Open screens.)
Print Status Screen	During operation, the LCD will indicate the current Print Status by showing you the area of the Printer that is active. It does this by displaying the following icons on the second line: • FDR Indicates the Feeder Station is feeding a blank card into the Printer. • ENC Indicates the Encode Station is encoding a card (appears only if you are using a Printer with an optional built-in Encoding Module). • PRT Indicates the Print Station is printing onto the film. • LAM indicates the Lamination Station is applying an overlaminate to a card (appears only if using a Printer equipped with the optional Card Lamination Module. See Section 3: Card Lamination Module on page 133. Since the Printer is capable of performing several of these functions simultaneously, one or all of these icons may appear at once, depending on if you are printing just one card or a batch of cards. The Print Status screen always displays **Cancel** in the lower left and **Pause** in the lower right.

Continued on the next page

Printer Components: LCD and Softkey Control Pad (continued)

Component	Description
The **Cancel** button	Use this button to cancel print jobs and reset the Printer for the next print job. • This **Cancel** function will cancel all print jobs in the Printer and will completely reset the Printer. In this case, be sure to cancel the print jobs from the PC before pressing **YES**. **Caution:** To avoid this, select the **Print in Single Card Mode** option from the Printer driver before sending the next print job. If a card is left within the Printer after a print job is canceled, it will automatically be ejected.
Pause button	Use this button to pause the Printer at any time during operation. (**Note:** The Printer will always finish its current task before pausing. When the Printer is paused, the LED light will flash and the **Pause** softkey button will change to **Resume**.) Press **Resume** to continue Printer operation.

Continued on the next page

Printer Components: LCD and Softkey Control Pad (continued)

Component	Description
LED light	This light works in conjunction with the Printer's LCD display to help communicate the Printer's current status. (**Note:** It is especially effective when the User is too far away from the Printer to read the LCD display.) The following explains how to interpret both LED lights on the exterior of the Printer. • **Off:** Indicates the Printer power is OFF. • **Solid GREEN:** Indicates the Printer is powered ON and ready for operation. • **Flashing GREEN:** Indicates a Printer ERROR or ATTENTION condition. (**Note:** Refer to the Printer's LCD display for information.)

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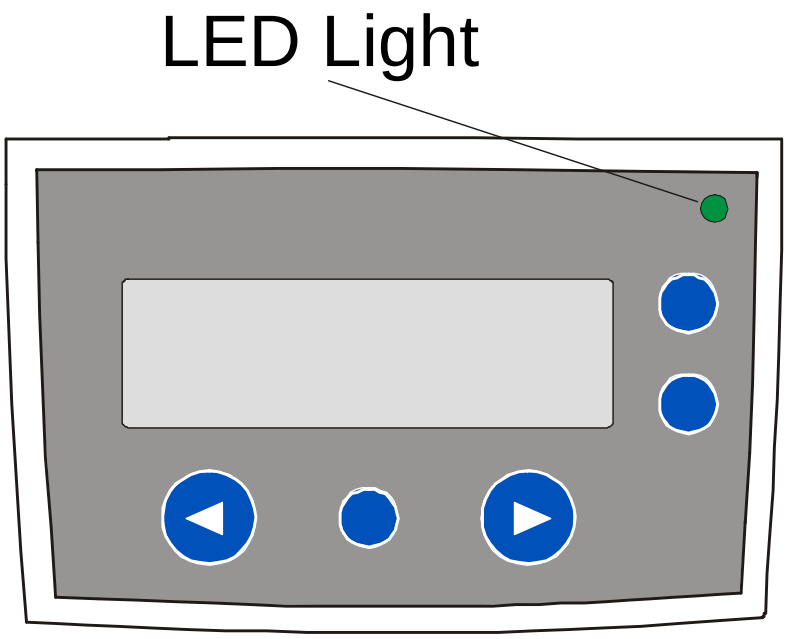


Printer Components: LCD and Softkey Control Pad (continued)

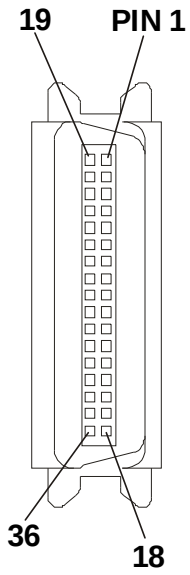
Component	Description
Error Screens	Your Printer is capable of communicating two similar yet different types of message screens: • The first is called an ERROR screen. This screen appears if an error occurs and will completely stop Printer operation. • In this case, the LCD will display ERROR on the first line and a brief description of the error on the second line. • If multiple errors occur at the same time, the first line will display ERROR 1 of 2 or whatever the total number of errors may be. To see the other error(s), use the scroll keys. • Press the **HELP** button to bring up the help screen explaining the nature of the error and how to correct it. If necessary, use the scroll buttons to scroll down the paragraph of help text. • Press **QUIT** when you are done reading. Once the error is corrected, resume operation or reset the Printer according to how you were instructed in the help screen.
Attention Screens	The second type of prompt is called an ATTENTION screen. • This screen will not stop Printer operation and serves to communicate helpful reminder (e.g., when running low on print supplies). • This screen communicates any other Printer conditions of which you should be aware. In this case, the LCD will display ATTENTION on the first line and a brief description of the condition on the second line. • If multiple messages need to be communicated at the same time, the first line will display ATTENTION 1 of 2 or whatever the total number of messages may be. • Like error messages, help text explaining the particular condition can also be accessed by pressing the **HELP** button.

Printer Components: Centronics-Type Parallel Interface

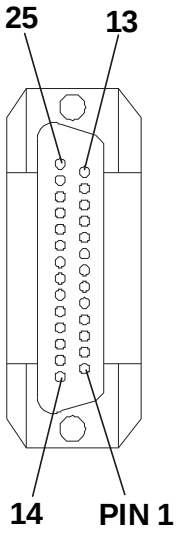
The card Printer is equipped with a standard 8-bit Centronics-type parallel interface port. (**Note:** This communication port is the means through which the Printer receives data from the computer. This section describes the pin assignments and signal specifications for this port.)

- If your Printer is equipped with optional embedded font and bar code support, it will include a DB-9, RS-232c, male serial connector. This port is used only for applications where the Printer will be connected to a terminal device such as an AS400.
- If your Printer is equipped with an optional E-Card encoding Station, it will include a DB-9, female serial connector. This port is used only for applications where the Printer will be connected to an external Smart Card interface.

The Printer's parallel interface connector is a standard 36-pin Amp type with two metal-wire retaining clips and is ECP (Extended Capabilities Port) compatible. (**Note:** It mates with a standard, bi-directional PC to Printer parallel cable. For best results, keep the interface cable to under 6 feet in length.)



WIRE DIAGRAM	
DB36P	**DB25P**
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
32	15
31	16
36	17
19 Through 30	19 Through 25
Shell	Shell



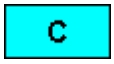
Printer Components: Print Ribbons

The card Printer utilizes both Dye-Sublimation and/or resin thermal transfer methods to print images directly onto blank cards. Since the Dye-Sublimation and the resin thermal transfer print methods (each) provide their own unique benefits, print Ribbons are available in resin-only, Dye-Sublimation-only and combination Dye-Sublimation/resin versions.

This letter code indicates the type of Ribbon panel used with each Ribbon.

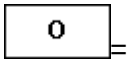
= Dye-Sublimation Yellow Panel

= Dye-Sublimation Magenta Panel



= Dye-Sublimation Cyan Panel

= Resin Black Panel



= Overlay Panel

Printer Components: Embedded Fonts and Bar Codes

The information in this section applies only if your Printer is configured with the embedded fonts and bar codes option. See the DTC Online User's Guide for additional information on Embedded Fonts and Bar Codes.

- This option provides select fonts and bar codes which are resident inside the Printer, allowing you to print resin black text and bar codes directly from a terminal device such as an AS400.
- If printing from a standard Windows application, the included Printer driver supports any TrueType font or bar code currently installed on your computer.

The existing and new Firmware updates for the DTC500 Series Card Printer/Encoders with the Embedded Fonts and Bar Codes option (require Firmware Version 1.5.9) and without the Embedded Fonts and Bar Codes option (require Firmware Version 2.0.0-b2) are described here. See Technical Update No. 46 (dated 11/06/2002).

- **DTC500 Series Card Printer/Encoders with Embedded Fonts and Bar Codes:** The latest version of Firmware supported by the Card Printer/Encoders is Firmware Version 1.5.9. (**Technician Note:** The Card Printer/Encoders will not support Firmware Version 2.0.0-b2 or optional Card Lamination Module compatibility.)
- **DTC500 Series Card Printer/Encoders without Embedded Fonts and Bar Codes:** The latest version of Firmware supported by the Card Printer/Encoders is Firmware Version 2.0.0-b2. (**Technician Note:** This version provides support for the optional Card Lamination Module.)

Printer Components: Blank Cards

Caution: Never run cards with a contaminated, dull or uneven surface through the Printer. Printing cards on this surface can lead to poor print quality and can greatly reduce the life of the Printhead. Always store the card stock in its original packaging or in a clean, dust-free container. Do not print onto cards that have been dropped or soiled. Printhead damage caused by contaminated or poor quality cards will automatically void the Printhead's factory warranty.

Type	Description
Card Size	The card Printer accepts standard CR-80 sized cards (3.375" L x 2.125" W/85.6mm L x 54mm W) or CR-79 sized cards (3.303" L x 2.051" W/83.9mm L x 52.1mm W) with a thickness of 10 mil to 50 mil. This does not apply for the LC printers.
Card Design	The Printer will print onto any card with a clean, level and polished PVC surface. (**Note:** Although the Printer is equipped with card cleaning Rollers, it is very important to always print onto cards specifically designed for direct-to-card Dye-Sublimation printing.)
Card Surface	Suitable cards must have a polished PVC surface free of fingerprints, dust or any other types of embedded contaminants. • Cards must have a completely smooth, level surface in order for the Printer to achieve consistent color coverage. • Some types of Proximity cards, for example, have an uneven surface which will inhibit consistent color transfer. • Some Smart Card chips are raised slightly above the cards surface, which also results in poor color transfer.
UltraCard Stock	Due to the importance of using high-quality blank cards, a factory-approved card stock called UltraCard™ is available and recommended for best results. • UltraCard stock has a glossy PVC laminate on top and bottom and is optically inspected to provide the cleanest, most scratch and debris-reduced cards possible. • Two types of these cards are available: UltraCard and UltraCard III. **UltraCard** stock has a PVC core and offers medium card durability. **UltraCard III** stock has a 40% polyester core and offers high durability. Both types of UltraCards produce printed images with a glossy, photo-quality finish.

Reviewing the upgraded 81754 PVC Cards

The upgraded 81754 PVC cards are designed for a sharper card image quality and for reduced debris and defects on Fargo Card Printers. Carefully read these detailed notes and instructions before applying this information to your Fargo printer or printers.

- **Technician Note 1:** The new card lot number starts at **Lot # 2010104** with date codes that started on **04/01/2003**. The photo (below) shows a lot number that starts after **Lot # 2010104**, indicating a new card lot number. The **card lot number** and **date** can be read on the bar code label attached to the shrink-wrapped stack of 100 cards, as shown below. All new Fargo printers with a serial number (S/N) starting with A320 will have factory settings for these new 81754 PVC cards.

- **Technician Note 2:** Do not use the new 81754 PVC card stock with Fargo laminating printers/encoders. This same guideline is used for the existing 81754 PVC card stock. Fargo recommends using the UltraCard III stock with the Fargo laminating printers/encoders.

Reviewing the upgraded 81754 PVC Cards (continued)

Follow these two (2) instructions below:

1. **Instruction for new 81754 PVC card stock:** Increase the Printer Driver's Dye-Sub Intensity to print with the new 81754 PVC card stock on Fargo Card Printers (S/N A319 and older). See the chart provided below. See the appropriate Fargo service documents for specific Printer Driver instructions.

Card	New Printer (S/N A320 and newer)	Old Printer (S/N A319 and older)
New Card	No Change Necessary	Increase the Dye-Sub Intensity as follows: HDP®: N/A Pro-LX/C25: 3 - 5 % DTC500: 5 -10 % C11/C16: 3 - 5 %

2. **Instruction for existing 81754 PVC card stock:** The Printer Driver's Dye-Sub Intensity setting may or may not need to be decreased to print existing card stock. See the chart provided below. See the appropriate Fargo service documents for specific Printer Driver instructions.
   - **Technician Note 1:** To control the brightness of the image, adjust the **Dye-Sub Intensity** slide on the **Image Color** tab of the Printer Driver.
   - **Technician Note 2:** Moving the **Dye-Sub Intensity** slide to the left causes less heat to be used in the printing process, thus generating a lighter print.

Card	New Printer (S/N A320 and newer)	Old Printer (S/N A319 and older)
Old Card	Decrease the Dye-Sub Intensity as follows: HDP®: N/A Pro-LX/C25: 3 - 5 % DTC500: 5 - 10 % C11/C16: 3 - 5 %	No Change Necessary

Printer Components: Card Input and Output Hoppers

Type	Description
Card Input Hopper	The Card Input Hopper is where cards are initially loaded for printing, as shown below. The Printer's hopper provides a large door that opens up wide to make card loading simple and closes securely to help protect the card stock. (**Note:** The Printer will hold a maximum of 100 cards in each Card Input Hopper, based on a standard 30 mil. card thickness.)
Card Output Hopper	All standard Card Printers provide a 100 card capacity Card Output Hopper (based on a standard 30 mil card thickness). (**Note:** This hopper stores the cards after they are printed.)

Printer Components: Lamination Roller

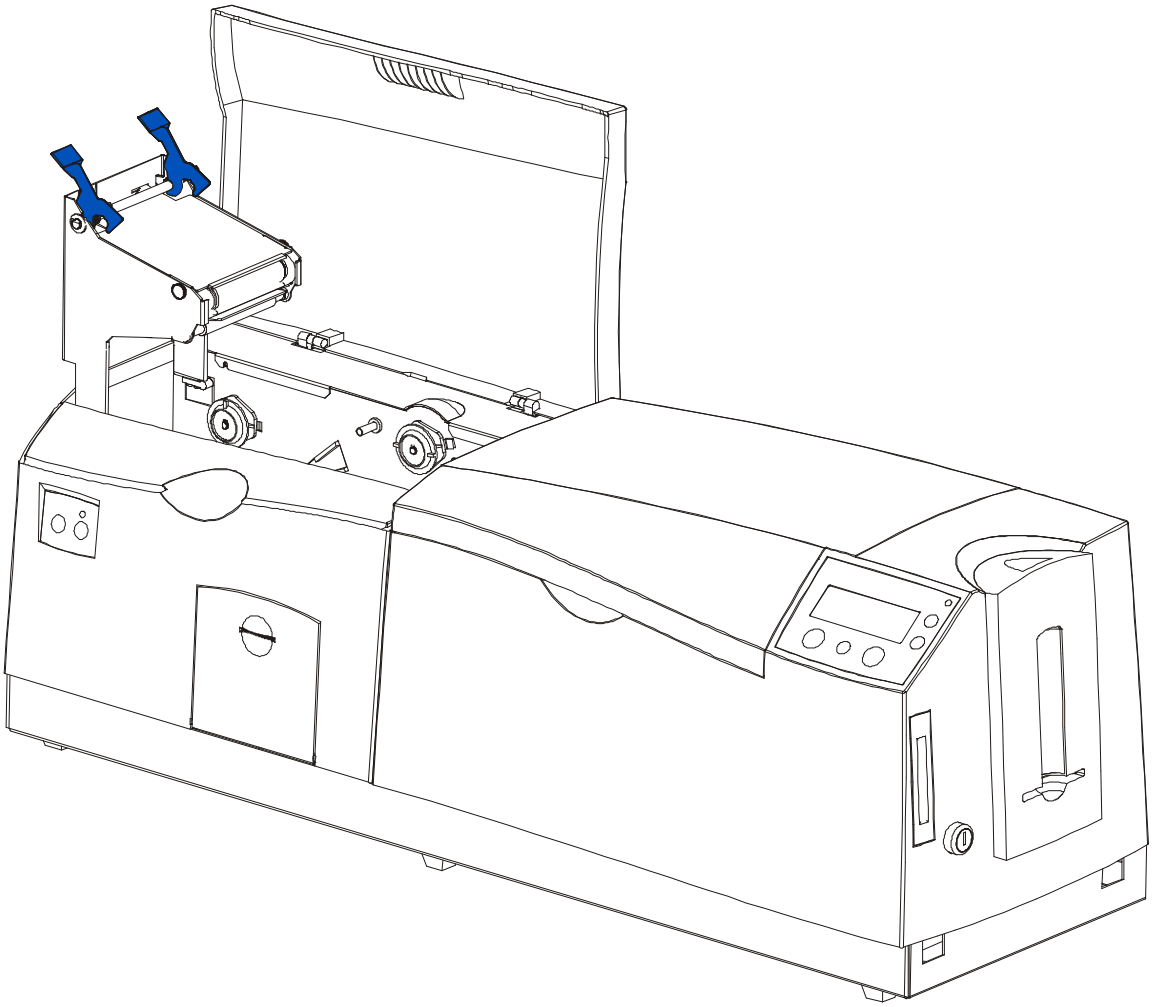
Danger: The Printer's Lamination Roller can reach temperatures exceeded 350 degree F (175 C). Use extreme caution when operating the Laminator. Never touch the Lamination Roller unless the Printer Power has been turned off for at least 20 to 30 minutes.

Type	Description
Controls	Both the Printer itself and the Printer's software driver control the built-in laminator.
Temperature Adjustment	To change the temperature of the laminator, adjust its temperature through the Lamination tab within the Printer driver setup window. Once adjusted, the new temperature settings will be sent down with the next print job along with the rest of the Printer driver information.
New Temperature Setting	Before printing begins, the laminator will automatically adjust itself to the new temperature setting. (**Note:** This new temperature setting will remain programmed within the Printer until it is once again changed within the Printer driver or until the Printer is turned OFF.) Whenever the Printer is turned OFF, the laminator will automatically reset itself and return to its default temperature the next time the Printer is turned ON. • Disconnect the Printer's power cord. (**Technician Note:** Both the Power Switch and the Printer's power cord serve to reset the laminator to its default temperature. The temperature setting within the Printer driver, however, will stay the same until it is changed.)

Reviewing the Card Lamination Module

Danger: The Printer's Lamination Roller can reach temperatures exceeding 350° F (175° C). Use extreme caution when operating the Laminator. Never touch the Lamination Roller unless the Printer has been turned off for at least 20 to 30 minutes.

Select Printer models support the attachment of an optional Card Lamination Module. This module can be ordered pre-installed on your Printer from the factory or can be ordered separately as a field upgradeable module.



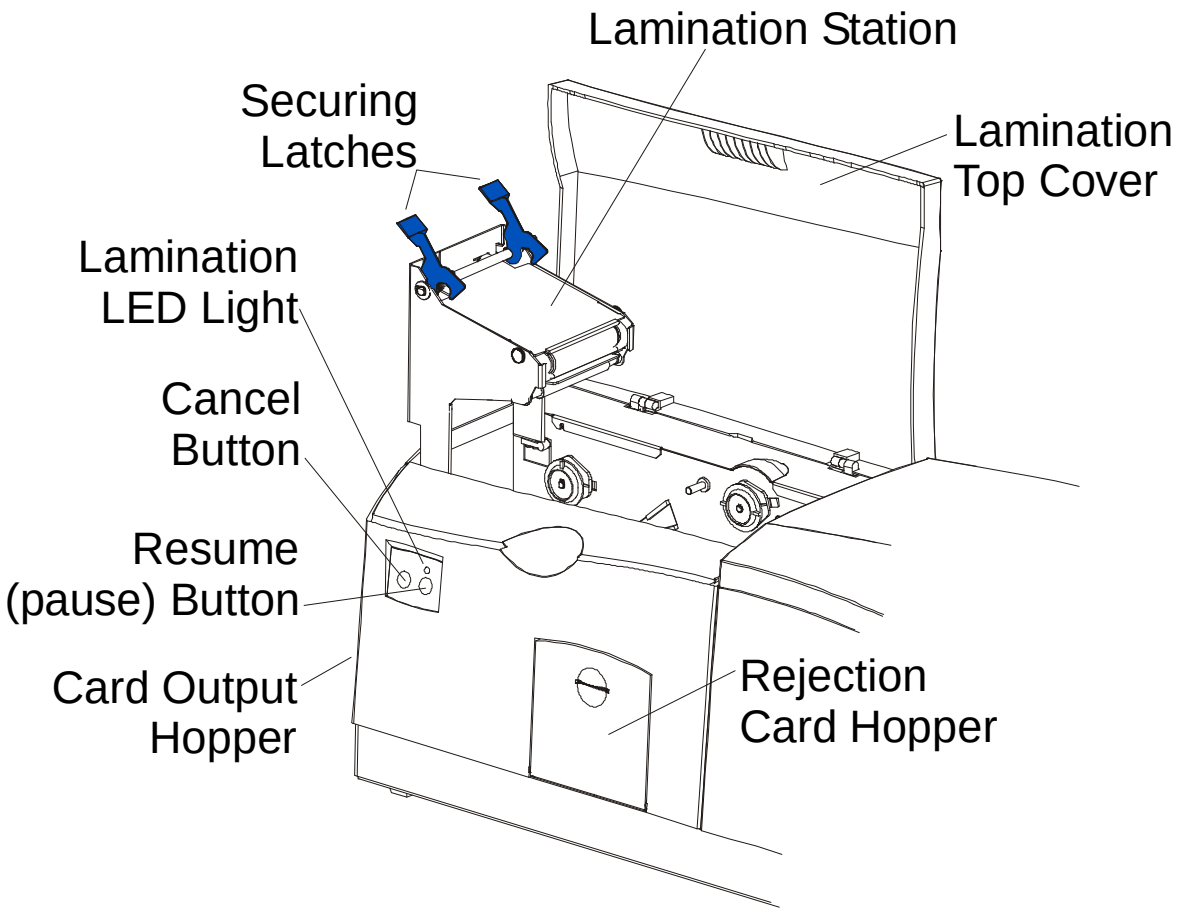
Determining the Ready Status of the Card Lamination Module

Caution (Technician Note): Review these requirements:

- If you are using a DTC525 Card Printer, you must have version 2.0.0-b2 or higher of the Printer's Main Firmware to use the Card Lamination Module.
- If you do not have these versions, the Card Lamination Module will not function properly. To check the version of your Printer's Firmware, simply turn the Printer power OFF and ON. (**Note:** The Firmware version will display momentarily on the Printer's LCD display during startup.)
- If you are in need of a Firmware upgrade, please go to Fargo's website (www.fargo.com) for the latest Firmware file and updating instructions. (**Note:** This file must be updated prior connecting the Card Lamination Module to the Printer.)
- **Technician Note:** All DTC525 units manufactured after Serial Number A2350145 are ready to have a Card Lamination Module attached to them.

Reviewing the Lamination Top Cover and Station

Component	Description	Cross Reference
Lamination Top Cover	Opens to allow access to the Lamination Station, overlaminate and card path.	See the Loading the Overlaminate in Section 3, page 134.
Lamination Station	Transfers overlaminates onto cards via its heated lamination Roller. The Lamination Station must be closed in order for the Printer to begin laminating.	See the Loading the Overlaminate in Section 3, page 134.



Reviewing the Securing Latches and Lamination LED light

Component	Description	Cross Reference
Securing Latches	Locks the Lamination Station securely in place when closed.	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 228.
Lamination LED light	The Lamination LED light works in conjunction with the Printer's LCD display to help communicate the Printer's current status. The following explains how to interpret the LED light. • **Off:** Indicates the Printer and lamination module power is OFF. • **Solid Green light:** Indicates the Card Lamination Module is ready for operation. • **Slow Flashing Green light:** Indicates the **lamination module's (pause)** button was pushed and that the lamination module is paused. This also occurs when the Lamination Station is open. • **Fast Flashing Green light:** Indicates the lamination module is in need of attention due to an error or an error condition. Refer to the Printer's LCD display for information.	See the Troubleshooting the LCD Messages in Section 2, page 65.

Reviewing the Cancel button

Component	Description	Cross Reference
Cancel Button	The **Cancel** button serves to cancel the current lamination job and reset the Card Lamination Module for the next lamination job. • If a card is left within the lamination module after a print job is canceled, it will automatically be ejected into the Rejection Card Hopper. (**Note:** With the Lamination Module's Transfer Station open, this button can also be used to manually rotate the Feed Rollers forward. This is helpful when cleaning the Rollers or if clearing jammed media.) • If you are printing and laminating simultaneously and you would like to cancel both the print and lamination jobs, press the Printer's **CANCEL** softkey button. (**Note:** This will cancel all jobs in the Printer. Any card currently laminating will finish and eject. The lamination module's **Cancel** button cancels only the lamination job.)	See the Section 3: Card Lamination Module on page 133.

Continued on the next page

Reviewing the Resume (pause) button

Component	Description	Cross Reference
Resume (pause) button	Press the **Resume** button to resume operation after an error condition is cleared. • If an error occurs, the lamination module's LED will flash and the Printer's LCD will report the specific error. • If this happens, correct the error and press the lamination module's **Resume** button to continue printing. Press this button to pause the lamination module during normal operation. (**Note:** The lamination module will always finish its current task before pausing.) • If this button is pressed while a card is being laminated, the lamination module will pause only after the current card has finished laminating and the lamination module has reached a safe stopping point.) • If the Printer is paused, the LED light will flash slowly and will return to solid when operation is resumed. (**Note:** with the Lamination Station open, the **Resume** button can also be used to manually rotate the Feed Rollers backward. This is helpful when cleaning the Rollers or when clearing jammed media.)	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 228.

Reviewing the Rejection Card Hopper and Card Output Hopper

Component	Description	Cross Reference
Rejection Card Hopper	The Rejection Card Hopper helps to separate potentially bad cards from a stack of good cards, which it eject into the Card Output Hopper. The Printer will automatically eject cards into this hopper to indicate: • There is a printing error, laminating error or encoding error. • There is a card is left in the Printer after a print job is canceled or the Printer restarted.	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 228.
Card Output Hopper	Stores up to 100 printed cards (30 mil cards). a. When the hopper has reached its maximum capacity of cards, note that the operation pauses and an Output Hopper Full message appears on the Printer's LCD display. b. Remove the stack of cards from the hopper. c. Press the lamination module's **Resume** button to continue. (**Note:** If printing onto oversized cards, the Card Output Hopper Door should be placed in the open position in order for these larger cards to eject properly.)	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 228.

Reviewing the Module and Printer interaction

Term	Description	Cross Reference
Module and Printer interaction	The Card Lamination Module works in conjunction with the Printer to apply a variety of different overlaminates to printed cards, providing increased card durability and security. The Lamination Module features its own LED indicator light and control buttons so it can conveniently be operated separately from the Printer. (**Note:** This means that when printing a batch of cards, for example, the Printer can be encoding and printing one card while the lamination module laminates another card for maximum efficiency.) In fact, you can even open the lamination module to replace the overlaminate while the Printer is printing or encoding and vice versa.	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 228.

Reviewing the Module and LCD display interaction

Term	Description	Cross Reference
Module and LCD display interaction	For ease of operation, the Card Lamination Module works in tandem with the Printer's LCD display to communicate status message such as when an error occurs or when it is time to replace the overlaminate material. If a lamination error does occur, the Lamination Module's LED will flash and an attention level message will appear on the Printer's LCD display. (**Note:** Since it is an ATTENTION level message, it will not interrupt printing.) a. Correct the error. b. Press OK to clear the LCD's ATTENTION message. c. Press the Lamination Module's **Resume** button to resume operation or its **Cancel** button to cancel the current lamination job and accept the next. (**Note:** If canceled, the canceled card will eject into the Rejection Card Hopper.)	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 228.

Continued on the next page

Reviewing the Module's Programmed Default Temperature

Term	Description	Reference
Programmed Default Temperature	Upon initial power up, the Lamination Module is programmed to heat the Lamination Roller up to its default temperature. • **Target Temperature:** If a print job is sent while the lamination module is heating up, the Printer's LCD display will read Laminator Warming. This will alternate with **LAM Temp: [current] [target]** which shows the current temperature of the Lamination Roller and the target temperature it is trying to reach. (**Note:** This indicates that the lamination Roller is heating to its preset temperature.) • **Initial Heating Process:** The initial heating process will generally take about 3 to 4 minutes. (**Note:** The LCD display will read **Laminator Warming** or **Laminator Cooling** whenever the Lamination Roller is heating up or cooling down to the prescribed temperature. When the Lamination Module has reached its target temperature, lamination will begin.)	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 228.

Reviewing the Laminator Temperature Adjustment

Term	Description	
Laminator Temperature Adjustment	To change the temperature of the Laminator, adjust its temperature through the Lamination tab within the Printer Driver setup window. • **New Temperature Settings:** Once adjusted, the new temperature settings will be sent down with the next print job along with the rest of the Printer driver information. Before printing begins, the laminator will automatically adjust itself to the new temperature setting. (**Note:** This new temperature setting will remain programmed within the Printer until it is once again changed within the Printer driver or until the Printer is turned OFF.) • **Automatic Reset:** Whenever the Printer is turned OFF, the laminator will automatically reset itself and return to its default temperature the next time the Printer is turned ON. (**Note:** Pressing the lamination module's or Printer's **Cancel** button or switching the Printer power OFF and ON both serve to reset the Laminator to its default temperature.) • **Consistent Temperature:** The temperature setting within the Printer driver stays the same until it is changed.	See the Using the Lamination tab (only with the Card Lamination Module) in Section 5, page 228.

Reviewing the Overlaminates

IMPORTANT! Fargo Card Printers require highly specialized overlaminates to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, the Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact the authorized reseller.

Reviewing the Thermal Transfer Film and PolyGuard Overlaminates

Term	Description	Cross Reference
Thermal Transfer Film and PolyGuard Overlaminates	The Card Lamination Module will accept either a Thermal Transfer Film overlaminate or a polyester patch overlaminate called PolyGuard™. • **Thermal Transfer Film:** The Thermal Transfer Film overlaminate is a relatively thin material which covers a card edge-to-edge and provides a medium level of card durability and security.) • **PolyGuard overlaminate:** PolyGuard is a much thicker material which does not cover edge-to-edge, but provides an extremely high level of card durability and security. (**Note:** PolyGuard is available in either a 1.0 or .6 mil thickness and should always be used for those applications requiring the highest degree of card durability and security.)	See the Loading the Overlaminate procedure in Section 3, page 134.

Reviewing the CR-90 or CR-100 Patch Size

Term	Description	Cross Reference
CR-90 or CR-100	PolyGuard overlaminate is available in a standard CR-80 patch size as well as a CR-90 and CR-100 patch size for laminating oversized CR-90 or CR-100 cards. (**Note:** Thermal Transfer Film overlaminate will accommodate CR-80 and CR-90 card sizes, but is not recommended for CR-100 cards.)	See the Loading the Overlaminate procedure in Section 3, page 134.

Reviewing the Overlaminate Design

Term	Description	Cross Reference
Design	Both PolyGuard and the Thermal Transfer Film overlaminates are available in either a clear or generic secure holographic-type design. (**Note:** Custom holographic-type overlaminates are also available with specific designs, patterns, logos and security features.) Please contact the authorized reseller for more information about custom Overlaminates.	See the Loading the Overlaminate procedure in Section 3, page 134.

Reviewing the Visual Security Solutions

VeriMarkTM Cards - 2-D holographic foil application

VeriMarkTM Cards are a low cost, customized 2-D holographic foil application, that is made in two steps.

- The first step is to emboss a base foil 1.9 cm (L) x 1.3 cm (H) onto the surface of a blank white card.
- The second step is debossing a custom made dye into the surface of the base foil - leaving a customized image, logo or text provided by the customer.
- Two separate color foils are used to contrast the impression.

End Users will be able to choose between 8 different card placements (4 - landscape) and (4-portrait) where the VeriMarkTM can be located. When its time to print through the driver, the End User will select the location on their organizations card design around which no printing and overlay will be placed.

Custom HoloMarkTM Cards

A Custom HoloMark TM Card is a three-dimensional holographic image transferred to metal foil and embossed to blank cards. The image is customer specific and the program mirrors our holographic laminates program with a couple exceptions.

Visual Security - Card Stock Part Numbers

All Visual Security Cards will be offered on the following Fargo Card Stocks only:

- P/N# 81754 Ultra Card
- P/N# 81762 Ultra Card III with hi-coercivity magnetic stripe
- P/N# 81763 Ultra Card III

Visual Security - Fargo Certified Overlaminates (Special Order in 50 quantity minimum)

- Part No. 82255: PolyGuard 1.0 mil for HoloMarkTM and VeriMarkTM Cards, Clear
- Part No. 82256: PolyGuard 1.0 mil for HoloMarkTM and VeriMarkTM Cards, High Resolution Globe design hologram with "Secure" micro-text

Visual Security Card Stock - Tolerances

- Tolerance of base foil placement will equal +/- .010" from the nearest edges of the card
- Tolerance of layered foil will equal +/- .010"

VeriMarkTM - Application Specifications

VeriMarkTM foils will cover a dimensional area of 1.9 cm length x 1.3 cm height. The exclusive areas are as follows:

- VeriMarkTM Card customers will be able to choose 1 of 8 pre-defined placements (corners) via printer driver (4 positions) Landscape and (4 Positions) Portrait mode.
- VeriMarkTM foil placement will not interfere with card punch slots .
- Foil color base is silver; debossed impression is gold foil.
- VeriMarkTM foil placement will be located 0.4 cm from the edges of the card except for the top two locations on portrait orientation cards (positions E & F). The foil will be located 0.9 cm from the top of the card and 0.4 cm from the sides of the card.

HoloMarkTM and Custom HoloMarkTM - Application Specifications

HoloMarkTM and Custom HoloMarkTM foils will cover a dimensional area of 1.5 cm x 1.5 cm. The exclusive areas are as follows:

- HoloMarkTM and Custom HoloMarkTM card end-users will be able to choose 1 of 8 pre-defined placements (corners) via printer driver (4 positions) Landscape and (4 positions) Portrait mode.
- HoloMarkTM foil placement will not interfere with card punch slots.
- Foil Color options will be silver or gold.
- Outside edge placement of Foil impression options on card will be 0.4 cm from edge of card.
- HoloMarkTM foil placement options will be at all four corners of card located 0.4 cm from edge of card.

Section 2: General Troubleshooting

IMPORTANT! Fargo Card Printers require highly specialized print Ribbons to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, your Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact your authorized reseller.

Reviewing the LCD display and LED light

The LCD display provides the current status of the Printer. Refer to the following tables for a complete list and cause of all possible LCD messages. The tables (in this section) display the LCD messages. If the LCD message is communicating an error or requires an action, these tables will also offer a solution to what should be done.

The purpose of this section is to provide the User with specific procedures relating to the LCD/SmartGuard Messages, Communication Errors, Card Feeding Errors, Encoding Errors, Printing Process Errors and Diagnosing the Image Problems for the DTC500 series card Printer.

Troubleshooting the LCD Messages

Message	Cause	Solution
Aligning Ribbon	If this appears as a prompt, it indicates the print Ribbon is self-aligning to the proper position for printing. If this appears as an ERROR, it indicates the print Ribbon is not installed properly or is damaged.	See Resolving the Ribbon Alignment Error Message in Section 2, page 101.
Card Hopper Empty	Indicates the Printer has run out of blank cards.	See the Resolving the Card Hopper Empty Error Message procedure in Section 2, page 92.
Card Hopper Jam	Indicates that the Card Hopper is unable to move from one hopper to the next.	Clear any obstructions and close the hopper door. See Resolving the Card Hopper Jam Error Message in Section 2, page 91.

Continued on the next page

Troubleshooting the LCD Messages (continued)

Message	Cause	Solution
Card Jam	Indicates that a card is jammed in the Print Station or card flipping area of the Printer.	See Card Feeding Errors in Section 2, page 86.
Card Jam: Flipper	Indicates that a card is jammed in the card flipping area of the Printer.	See Resolving cards jamming on the Flipper table in Section 2, page 89.
Card Jam: Print	Indicates that a card is jammed in the Print Station of the Printer.	See Card Feeding Errors in Section 2, page 86.
Card Jam: Mag	Indicates that a card is jammed in the magnetic encoding area of the Printer.	See Removing the Card jam in the Printer's Magnetic Encoding Area in Section 2, page 96.
Card Jam: Smart	Indicates that a card is jammed in the Smart Card encoding area of the Printer.	See Removing the Card jam in the Printer's Smart Card Encoding Area in Section 2, page 97.
Data Input	Indicates that the print data sent to the Printer is corrupt or has been interrupted.	See Resolving the Communication Errors in Section 2, page 81.
Data Timeout	Indicates that the print data sent to the Printer is corrupt or has been interrupted.	See Resolving the Communication Errors in Section 2, page 81.
DRAM Memory Error	Indicates that the Printer's Memory Module is bad or is not installed properly.	See Resolving the DRAM Memory Error in Section 7, page 247.

Continued on the next page

Troubleshooting the LCD Messages (continued)

Message	Cause	Solution
EE Checksum Error	Indicates that the permanent circuit board memory is bad.	See Resolving the EE Checksum Error in Section 7, page 246.
EE Memory Error	Indicates that the permanent circuit board memory is bad.	See Resolving the EE Memory Error in Section 7, page 246.
Ejecting Used Card	Indicates that the system Firmware has detected a card already in the Printer.	This card has been ejected; however, it may contain encoded data and should be disposed of in a proper manner.
Failed To Initialize	Indicates that an unexpected hardware error has occurred.	See Board Errors in Section 7, page 246.
Flipper Alignment	Indicates that the Printer is unable to align the Flipper table.	See Resolving the Flipper Alignment Error Message in Section 2, page 108.
FPGA	Indicates that an unexpected hardware error has occurred.	See Resolving the FPGA Error in Section 7, page 247.
FPGA Load Fail	Indicates that an unexpected hardware error has occurred.	See Resolving the FPGA Error in Section 7, page 247.
FPGA Timeout	Indicates that an unexpected hardware error has occurred.	See Resolving the FPGA Error in Section 7, page 247.
Head Lift	Indicates that the Printer was unable to raise or lower the Printhead.	See Resolving the Headlift Error Message in Section 2, page 105.

Continued on the next page

Troubleshooting the LCD Messages (continued)

Message	Cause	Solution
Head Resistance Error	The LCD requires that a value be input for the Print Head Resistance.	Enter a value for head resistance in the LCD's Printer Setup menu. See Setting the Printhead Resistance in Section 8, page 262.
Head Voltage Error	A hardware fault has prevented a correct setting of the Printhead voltage.	A default value will be used.
Hopper 1 Empty	Card Hopper 1 has run out of cards. (**Note:** The Printer will continue printing from Hopper 2 if First Available is set as the Card Hopper Selection in the Driver.)	See the Resolving the Card Hopper Empty Error Message procedure in Section 2, page 92.
Hopper 2 Empty	Card Hopper 2 has run out of cards. (**Note:** The Printer will continue printing from Hopper 1 if First Available is set as the Card Hopper Selection in the Driver.)	See the Resolving the Card Hopper Empty Error Message procedure in Section 2, page 92.
Invalid Flip Command	Indicates that the Printer received a command to print both sides of the card, but this model does not support dual-sided printing.	Press CANCEL to reset the Printer or RESUME to print onto two separate cards.
Invalid Print Ribbon	Indicates an unauthorized Ribbon.	Install a valid, Fargo-authorized Ribbon and press RESUME to continue. See Resolving the Unknown Ribbon Type Error Message in Section 2, page 104.

Continued on the next page

Troubleshooting the LCD Messages (continued)

Message	Cause	Solution
Mag Encode Failed	Indicates that the card's Magnetic Stripe was not encoded properly.	See Resolving the Failed Magnetic Encode Error Message in Section 2, page 95.
Multiple Cards Fed	Indicates that two or more cards were fed from the Card Hopper.	See Resolving the Card Feeding Errors in Section 2, page 86.
No ENC Response	Indicates that there is no response from the Encoder control module.	See Resolving the No ENC Response Error Message in Section 2, page 93.
No MAG Encoder	Indicates that the Printer has received encoding data, but the Printer is not configured with this Encoder type.	See Resolving the No Magnetic Encoder Error Message in Section 2, page 93.
No Ribbon Installed	Indicates that the Printer is trying to print with no print Ribbon installed.	Install the proper print Ribbon and press RESUME to continue or CANCEL to reset the Printer.
No Smart Encoder	Indicates that the Printer has received encoding data, but the Printer is not configured with this Encoder type.	See Resolving the No Smart Encoder Error Message in Section 2, page 95.
Pause...	Indicates the Printer is paused.	Press the Printer's RESUME button to continue or CANCEL to clear all pending print jobs and reset the Printer.
Please Clean Printer	This message appears every 3,000 prints to remind you to perform the recommended Printer maintenance.	See the Cleaning the Printer procedure in Section 4, page 228.
Please Remove Card	Indicates that the card is jammed in the Print Station or card flipping area of the Printer.	See Card Feeding Errors in Section 2, page 86.

Continued on the next page

Troubleshooting the LCD Messages (continued)

Message	Cause	Solution
Print Data	Indicates that the print data sent to the Printer is corrupt or has been interrupted.	See Communications Errors in Section 2, page 72.
Print Ribbon Low	Indicates that the print Ribbon will soon run out.	If printing a large number of cards, replace the Ribbon now or monitor the Printer until the Ribbon is gone and install a new Ribbon.
Print Ribbon Out	Indicates that the print Ribbon has run out.	Install a new Ribbon and press RESUME to continue.
Print Station Open	Indicates that the Print Station is open during printing.	Close the Station and press the Printer's RESUME button to continue or CANCEL to reset the Printer.
Print Timeout	Indicates that the Printer was unable to complete the print process.	See Communications Errors in Section 2, page 72.
Printhead Temp	Indicates that the Printhead Temperature Regulator is not functioning properly.	See Resolving the Printhead Temp Error Message in Section 2, page 107.
Program Exception	Indicates that the system Firmware has detected an error while attempting to process the current print job.	See the Updating the Printer's Firmware procedure in Section 9, page 275.
RAM Memory Error	Indicates that the Printer's Memory Module is bad or not installed properly.	See Resolving the DRAM Memory Error in Section 7, page 247.
Ribbon Jam/Broken	The print Ribbon is either jammed or broken.	See Resolving the Ribbon Jam/Broke Error Message in Section 2, page 102.

Continued on the next page

Troubleshooting the LCD Messages (continued)

Message	Cause	Solution
Smart Encode Failed	The card's smart chip was not encoded properly.	See Resolving the Failed Smart Encode Error Message in Section 2, page 95.
Starting Self-test	The self-test print is preparing to print.	See the Printing the Self-test procedure in Section 8, page 254.
Testing Memory	The Printer's memory is being tested.	Upon completion, the Printer will continue its normal boot up sequence.
Top Cover Open	A print job was started with the Top Cover open.	Close the Printer and press RESUME to continue or CANCEL to reset the Printer.
Unable To Feed Card	The Printer is unable to feed a card from the Card Hopper.	See Resolving the Card Feeding Errors in Section 2, page 86.
Unknown Ribbon Type	The Printer does not recognize the Ribbon installed.	See Resolving the Unknown Ribbon Type Error Message in Section 2, page 104.
Update Failed	The Firmware update was interrupted or not completed successfully.	See Resolving an Upgrade Failed error in Section 2, page 109.
Update Firmware Now	An error has occurred in trying to load the Firmware.	The system Firmware MUST be updated. See Updating the Printer's Firmware in Section 10, page 275.
Wrong Print Ribbon	The print Ribbon installed in the Printer does not match the Ribbon type selected in the Printer driver.	See Resolving the Wrong Print Ribbon Error Message in Section 2, page 103.

Verifying the Encoding Settings for DTC500 Series Card Printer and Encoders

The purpose of this Technical Update is to clarify Encoding Settings in the DTC500 Series Card Printer/Encoders. To ensure the proper function of your DTC500 Series Printer, all of the Printer's Encoding Options must be set correctly in the Printer's LCD display. Please refer to the tables (on the next page) to review the proper settings for (a) the different DTC500 Series Printer models and (b) the different symptoms related to incorrect settings.

Follow these instructions to access your DTC500 Series Printer displays:

- Use the Printers LCD display touch pad to press the **Menu** button.
- Use the down arrow button to scroll down and select **Setup Printer**.
- Use the down arrow button to scroll down and select the Encoder Settings.

The three (3) Encoding Options available are **Mag**, **Smart** and **Prox**. These options must be set up according to the Printer model to avoid printing issues.

- If you are unsure what your Printer should be set to at this time, please see the tables on the following pages.
- You can compare your Printer's part number (located on the silver label on the bottom of your Printer) to the part number (shown in the tables on the following pages) in order to find the Printers correct settings.

Verifying Encoder Settings for DTC 510/DTC 515 (Symptom A)

Symptoms of incorrect settings (Symptom A): Printer will try to rotate the Flipper Table during a print job. The Flipper (however) is not powered and the printer will stall out with a Flipper Jam or Data Time Out error.Table 1 (DTC 510 and DTC 515), Technical Update No. 66 (dated 09/24/2003)

Printer Model	Part No.	Proper Encoder Display Settings	
DTC 510 No Encoding	85301	Mag	None
		Smart	None
DTC 515 No Encoding	85351	Prox	None

Verifying Encoder Settings for DTC 510/DTC 515 (Symptom B)

Symptom of incorrect settings (Symptom B): Flipper Table will freely rotate and cause card jams at the Flipper Table.

Printer Model	Part No.	Proper Encoder Display Settings	
DTC 510 Magnetic encoding	85302	Mag	Installed
		Smart	None
DTC 515 Magnetic encoding	85352	Prox	None
DTC 510 Docking Station	85303	Mag	None
		Smart	Installed
DTC 515 Docking Station	85353	Prox	None
DTC 510 Docking Station + Magnetic Encoding	85304	Mag	Installed
		Smart	Installed
DTC 515 Docking Station + Magnetic Encoding	85354	Prox	None

Continued on the next page

Verifying Encoder Settings for DTC 510/DTC 515 (Symptom B) (continued)

Printer Model	Part No.	Proper Encoder Display Settings	
DTC 510 JIS II Magnetic Encoder DTC 515 JIS II Magnetic Encoder	85305 85355	Mag	Installed
		Smart	None
		Prox	None
DTC 510 Docking Station + Magnetic Encoder DTC 515 Docking Station + Magnetic Encoder	85306 85356	Mag	Installed
		Smart	Installed
		Prox	None
DTC 510 Docking Station, Contact Smart Card Encoder DTC 515 Docking Station, Contact Smart Card Encoder	91101 91201	Mag	None
		Smart	Installed
		Prox	None
DTC 510 Docking Station, MIFARE Contactless Smart Card Encoder DTC 515 Docking Station, MIFARE Contactless Smart Card Encoder	91102 91202	Mag	None
		Smart	Installed
		Prox	None
DTC 510 Docking Station, HID Prox Reader DTC 515 Docking Station, HID Prox Reader	91104 91204	Mag	None
		Smart	Installed
		Prox	Installed
DTC 510 Docking Station, Contact Smart Card encoder MIFARE Encoder DTC 510 Docking Station, Contact Smart Card encoder MIFARE Encoder	91105 91205	Mag	None
		Smart	Installed
		Prox	None

Continued on the next page

Verifying Encoder Settings for DTC 510/DTC 515 (Symptom B) (continued)

Printer Model	Part No.	Proper Encoder Display Settings	
DTC 510 Docking Station, MIFARE Encoder, HID Prox Encoder DTC 515 Docking Station, MIFARE Encoder, HID Prox Encoder	91106 91206	Mag	None
		Smart	Installed
		Prox	Installed
DTC 510 Docking Station, Contact Smart Card Encoder, MIFARE Encoder, HID Prox Reader DTC 515 Docking Station, Contact Smart Card Encoder, MIFARE Encoder, HID Prox Reader	91107 91207	Mag	None
		Smart	Installed
		Prox	Installed
DTC 510 Docking Station, Magnetic Encoder, Contact Smart Card encoder DTC 515 Docking Station, Magnetic Encoder, Contact Smart Card encoder	91108 91208	Mag	Installed
		Smart	Installed
		Prox	None
DTC 510 Docking Station, Magnetic Encoder, MIFARE Encoder DTC 515 Docking Station, Magnetic Encoder, MIFARE Encoder	91109 91209	Mag	Installed
		Smart	Installed
		Prox	None
DTC 510 Docking Station, Magnetic Encoder, HID Prox Reader DTC 515 Docking Station, Magnetic Encoder, HID Prox Reader	91110 91210	Mag	Installed
		Smart	Installed
		Prox	Installed

Continued on the next page

Verifying Encoder Settings for DTC 510/DTC 515 (Symptom B) (continued)

Printer Model	Part No.	Proper Encoder Display Settings	
DTC 510 Docking Station, Magnetic Encoder, Contact Smart Card Encoder, MIFARE Encoder	91111	Mag	Installed
		Smart	Installed
DTC 515 Docking Station, Magnetic Encoder, Contact Smart Card encoder	91211	Prox	None
DTC 510 Docking Station, Magnetic Encoder, Contact Smart Card Encoder, HID Prox Reader	91112	Mag	Installed
		Smart	Installed
DTC 515 Docking Station, Magnetic Encoder, Contact Smart Card Encoder, HID Prox Reader	91212	Prox	Installed
DTC 510 Docking Station, Magnetic Encoder, MIFARE Encoder, HID Prox Reader	91113	Mag	Installed
		Smart	Installed
DTC 515 Docking Station, Magnetic Encoder, MIFARE Encoder, HID Prox Reader	91213	Prox	Installed
DTC 515 Docking Station, Magnetic Encoder, Contact Smart Card Encoder, MIFARE Encoder, HID Prox Reader	91114	Mag	Installed
		Smart	Installed
DTC 515 Docking Station, Magnetic Encoder, Contact Smart Card Encoder, MIFARE Encoder, HID Prox Reader	91214	Prox	Installed

Verifying the Encoding Settings for the DTC 520/DTC 525

Symptoms of incorrect settings: Printers card feed motor for the flipper table will rotate backwards and then produce a Card Jam error.

Printer Model	Part No.	Proper Encoder Display Settings	
DTC 520 No Encoding	85401	Mag	None
DTC 525 No Encoding	85451	Smart	None
		Prox	None
DTC 520 Magnetic encoding	85402	Mag	Installed
DTC 525 Magnetic encoding	85452	Smart	None
		Prox	None
DTC 520 Docking Station	85403	Mag	None
DTC 525 Docking Station	85453	Smart	Installed
		Prox	None
DTC 520 Docking Station + Magnetic Encoding	85404	Mag	Installed
		Smart	Installed
DTC 525 Docking Station + Magnetic Encoding	85454	Prox	None
DTC 520 JIS II Magnetic Encoder	85405	Mag	Installed
DTC 525 JIS II Magnetic Encoder	85455	Smart	None
		Prox	None

Continued on the next page

Verifying the Encoding Settings for the DTC 520/DTC 525 (continued)

Printer Model	Part No.	Proper Encoder Display Settings	
DTC 520 Docking Station + Magnetic Encoder	85406	Mag	Installed
		Smart	Installed
DTC 525 Docking Station + Magnetic Encoder	85456	Prox	None
DTC 520 Docking Station, Contact Smart Card Encoder	91301	Mag	None
		Smart	Installed
DTC 525 Docking Station, Contact Smart Card Encoder	91401	Prox	None
DTC 520 Docking Station, MIFARE Contactless Smart Card Encoder	91302	Mag	None
		Smart	Installed
DTC 525 Docking Station, MIFARE Contactless Smart Card Encoder	91402	Prox	None
DTC 520 Docking Station, HID Prox Reader	91304	Mag	None
		Smart	Installed
DTC 525 Docking Station, HID Prox Reader	91404	Prox	Installed
DTC 520 Docking Station, Contact Smart Card encoder MIFARE Encoder	91305	Mag	None
		Smart	Installed
DTC 525 Docking Station, Contact Smart Card encoder MIFARE Encoder	91405	Prox	None

Continued on the next page

Verifying the Encoding Settings for the DTC 520/DTC 525 (continued)

Printer Model	Part No.	Proper Encoder Display Settings	
DTC 520 Docking Station, MIFARE Encoder, HID Prox Encoder DTC 555 Docking Station, MIFARE Encoder, HID Prox Encoder	91306 91406	Mag	None
		Smart	Installed
		Prox	Installed
DTC 520 Docking Station, Contact Smart Card Encoder, MIFARE Encoder, HID Prox Reader DTC 525 Docking Station, Contact Smart Card Encoder, MIFARE Encoder, HID Prox Reader	91307 91407	Mag	None
		Smart	Installed
		Prox	Installed
DTC 520 Docking Station, Magnetic Encoder, Contact Smart Card encoder DTC 525 Docking Station, Magnetic Encoder, Contact Smart Card encoder	91308 91408	Mag	Installed
		Smart	Installed
		Prox	None
DTC 520 Docking Station, Magnetic Encoder, MIFARE Encoder DTC 525 Docking Station, Magnetic Encoder, MIFARE Encoder	91309 91409	Mag	Installed
		Smart	Installed
		Prox	None
DTC 520 Docking Station, Magnetic Encoder, HID Prox Reader DTC 525 Docking Station, Magnetic Encoder, HID Prox Reader	91310 91410	Mag	Installed
		Smart	Installed
		Prox	Installed

Continued on the next page

Verifying the Encoding Settings for the DTC 520/DTC 525 (continued)

Printer Model	Part No.	Proper Encoder Display Settings	
DTC 520 Docking Station, Magnetic Encoder, Contact Smart Card Encoder, MIFARE Encoder DTC 525 Docking Station, Magnetic Encoder, Contact Smart Card encoder	91311 91411	Mag	Installed
		Smart	Installed
		Prox	None
DTC 520 Docking Station, Magnetic Encoder, Contact Smart Card Encoder, HID Prox Reader DTC 525 Docking Station, Magnetic Encoder, Contact Smart Card Encoder, HID Prox Reader	91312 91412	Mag	Installed
		Smart	Installed
		Prox	Installed
DTC 520 Docking Station, Magnetic Encoder, MIFARE Encoder, HID Prox Reader DTC 525 Docking Station, Magnetic Encoder, MIFARE Encoder, HID Prox Reader	91313 91413	Mag	Installed
		Smart	Installed
		Prox	Installed
DTC 525 Docking Station, Magnetic Encoder, Contact Smart Card Encoder, MIFARE Encoder, HID Prox Reader DTC 525 Docking Station, Magnetic Encoder, Contact Smart Card Encoder, MIFARE Encoder, HID Prox Reader	91314 91414	Mag	Installed
		Smart	Installed
		Prox	Installed

Communications Errors

Resolving the Communication Errors

Symptom(s): Incorrect output, communications error on PC or Printer, stalling, no response from Printer, no job printed, “Paper out” error.

Step	Procedure
1	Confirm that the system meets the minimum requirements, as shown here: • IBM-PC or compatible • Windows 95/98/ME/NT/2000/XP Pentium™ class 133 MHz computer with 32 MB of RAM or higher • 200 MB free hard disk space or higher • ECP Parallel Port with DMA access
2	Confirm the correct installation of the Printer driver. a. Close the software program and check the Printer driver. b. Reboot the computer. c. Be sure the correct setup options within the Printer driver are selected. d. Confirm that the driver is current by checking at: www.fargo.com
3	Verify the use of an adequate data cable. a. Use a double-shielded parallel cable (no longer than six feet in length). (**Note:** Data transmission failure can be attributed to a long or faulty parallel cable.) b. Use an I-EEE 1284 compliant cable to reduce the effect of radio emissions from computers, monitors and other equipment that can broadcast Radio frequency interference (RFI).

Continued on the next page

Resolving the Communication Errors (continued)

Step	Procedure
4	Determine if there is interference from an external device. a. Do not use an A/B Switch Box or other peripheral in line with the parallel cable. b. If using a Switch Box or other peripheral, remove it while testing communication between the computer and the Printer. c. If needed, replace the Switch Box or other peripheral (once it is determined that the cause of the interference is not the Switch Box or the peripheral). d. **Alternative:** Add a second Parallel Port into the computer (if a second Printer is required).

Continued on the next page

Resolving the Communication Errors (continued)

Step	Procedure
5	Determine the nature of the problem with printing from the application. a. Print a self-test from the Printer to ensure that the Printer (itself) is functioning properly. See the Printing the Self-test in Section 8, page 254. b. Print the Windows test page that is located in the General tab of the driver. c. Use WordPad (a Windows 95/ 98/ ME/ NT/ 2000/XP word processing program in the Accessories Program Group) via Start > Programs > Accessories > WordPad. Follow this procedure: • Open the program and type: "This is a Test." • Select **File > Page Setup** and click on the **Printer** button. • Ensure that the DTC500 Series Card Printer is selected and click **OK.** • Change all the margin settings to **zero (0)** and click **OK.** • Select **File > Print** on the Menu Bar. • Go to **File** on Menu Bar and select **Print**.

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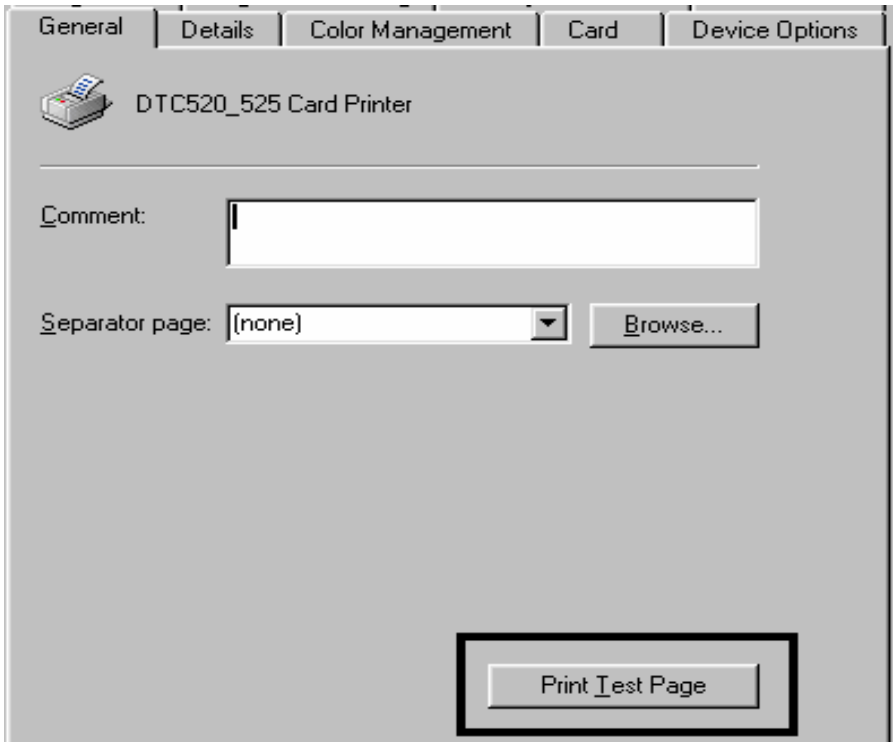


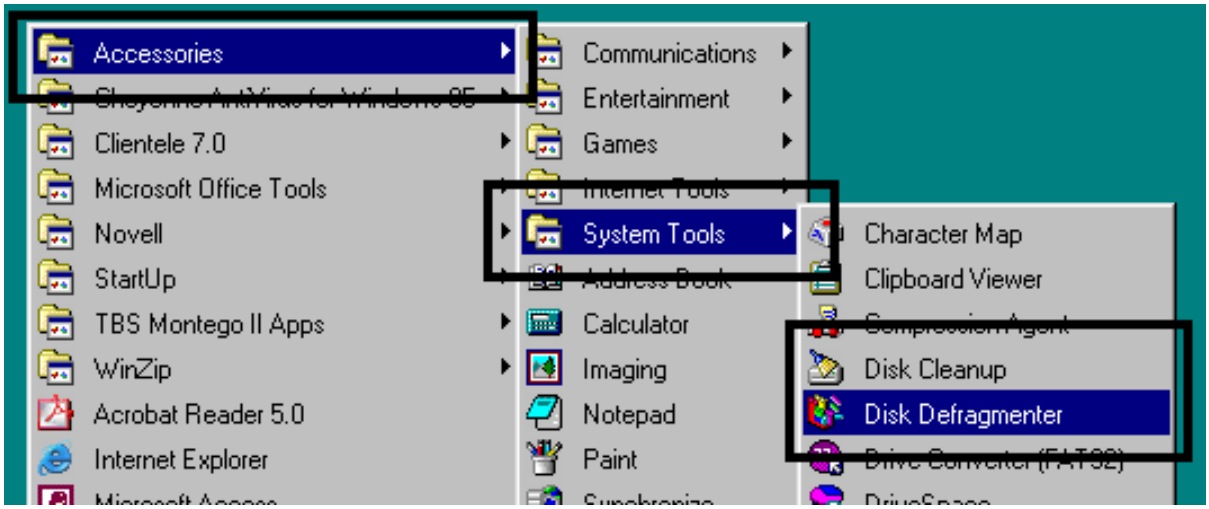
Resolving the Communication Errors (continued)

Step	Procedure
6	Determine if the Parallel Port mode is set correctly. a. Ensure that the Parallel Port is set to the Enhanced Communication Port (ECP) mode. (**Note:** The port mode can be determined by checking the Device Manager tab in the System Control Panel.) b. If the port mode is not set to ECP, it will need to be changed in the computers BIOS. (**Note:** Refer to the appropriate computer manual for instructions on how to change the Parallel Port mode.)

Continued on the next page

Resolving the Communication Errors (continued)

Step	Procedure
7	Determine whether there is an adequate or inadequate hard drive space. **Caution:** A large volume of temporary files on the computer can cause communications errors. Access the temporary files by following this process: • Search for all folders called TEMP. Once found, clear out the contents of the folders. • Run the System Tool - Disk Defragmenter (found in the Accessories folder of the **Start** Menu) if using Windows 95/98/ME/2000/XP,. • Use a disk cleanup utility (such as **Disk Cleanup** found in the System Tools folder of the Start menu) or use a third party application.



Card Feeding Errors

Resolving the Card Feeding Errors

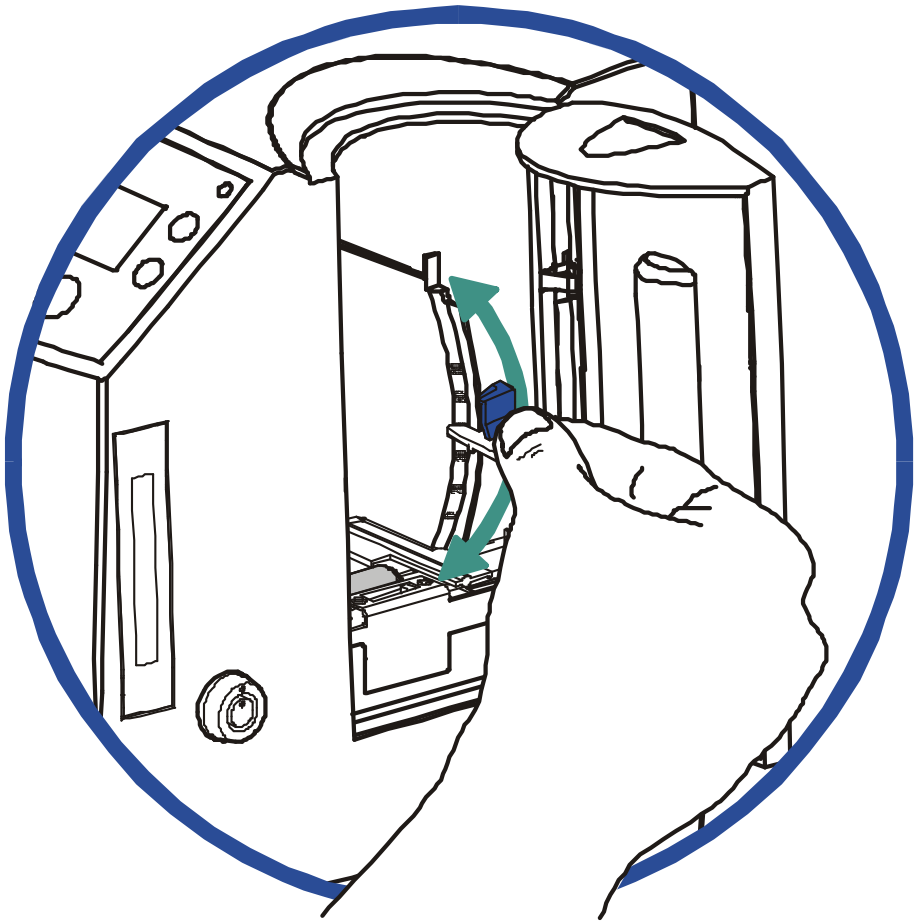
Symptom: Two or more cards feed at the same time or the cards will not feed at all.

Step	Procedure
1	Clean the Input Roller. a. Open the Printer's top covers and remove all cards and print Ribbons from the Printer. b. Leave the Printer power **ON** and the top covers open throughout this procedure. (**Note:** The card-cleaning cartridge can also remain within the Printer during this cleaning process.) c. Use a cleaning card from the Printer Cleaning Kit and remove its adhesive backing paper. d. Insert the cleaning card into the Exception Card Slot until the card stops. • Verify that the longest non-adhesive end of the cleaning card enters the Printer first and that the sticky side is facing DOWNWARD e. Press the FORWARD button several times to feed the Cleaning Card all the way through the Printer.

Continued on the next page

Resolving the Card Feeding Errors (continued)

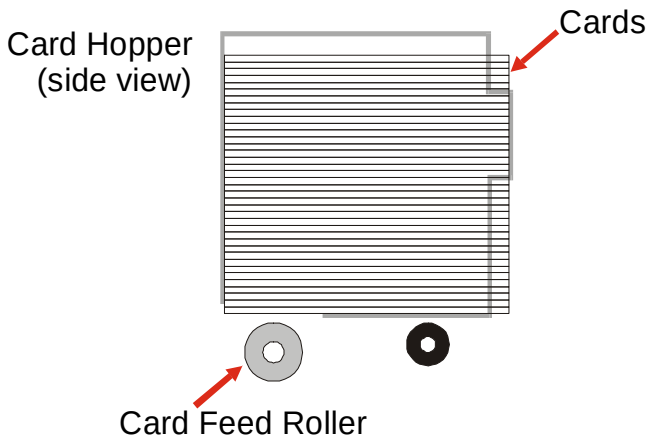
Step	Procedure
2	Ensure the Card Thickness Lever is set correctly, as shown below. a. Press the Card Thickness Lever Lock and then push the Card Thickness Lever up or down to the appropriate setting. b. with any of the **Card Thickness** settings, move the slide slightly toward a higher setting until the cards begin feeding (if the Printer seems unable to feed cards at the selected setting). c. Move the slide slightly toward a lower setting (if the Printer seems to double-feed cards). (**Note:** The card thickness slide is adjustable to accommodate card thickness variations that often occur even within standard card sizes.)



Resolving the Card Feeding Errors (continued)

Step	Procedure
3	a. Check for static build up between cards. (**Note:** Occasionally, a static charge will build up between the surfaces of two or more cards causing them to stick together.) b. Reduce or eliminate this static charge by separating the cards manually before placing them in the input hopper.
4	Ensure that the cards are loaded properly in the Input Hopper. a. Load the cards into the Printer by inserting them straight into the hopper and setting them on the feed Roller.
5	Verify that the Hopper Lift (A000124) is operational. a. Reset Power to the Printer. b. Open the Card Hopper Door and watch to verify that the Hopper Cycles on startup. c. If the Hopper does not cycle on startup, remove the top cover and verify that the Hopper Lift Motor is plugged in properly. d. If the Hopper Lift Motor is plugged in, disconnect it and attach a 9-volt battery to the leads. e. If the Motor turns, replace the Main Board (as needed). See the Replacing the Main Board procedure in Section 5, page **Error! Bookmark not defined.**.

Insert cards neatly stacked.

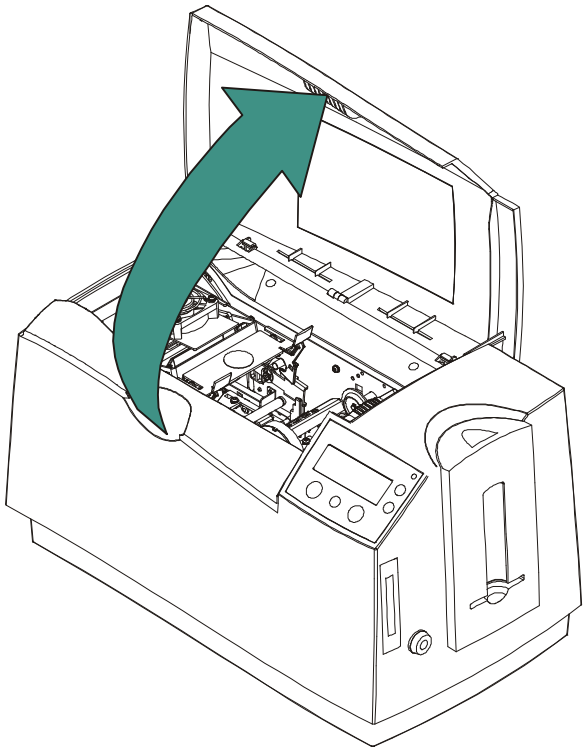


Resolving the Card Jam on the Flipper Table

Symptom: Cards are jamming on or at the Flipper Table or a Card Jam: Flip error is displayed on the LCD.

Step	Procedure
1	Verify that the Card Feed Roller on the Flipper table is not running backwards. (**Note:** Having an Encoder installed in the Printer will determine the direction that the Card Feed Roller on the Flipper Table will rotate.) a. Open the Top Cover and remove any cards that are jammed inside the Printer, as shown below. b. Reset power on the Printer to clear any error messages that are on the LCD. c. Press the MENU button on the LCD. d. Press the **Down Arrow** button and select PRINTER SETUP. e. Scroll through the menu and select ENCODER SETUP. f. Ensure that the appropriate Encoders settings are set to **Installed** or **None**, based on the options that are installed in the Printer. g. Press the **Save** button to save any changes that have been changed.

Continued on the next page.

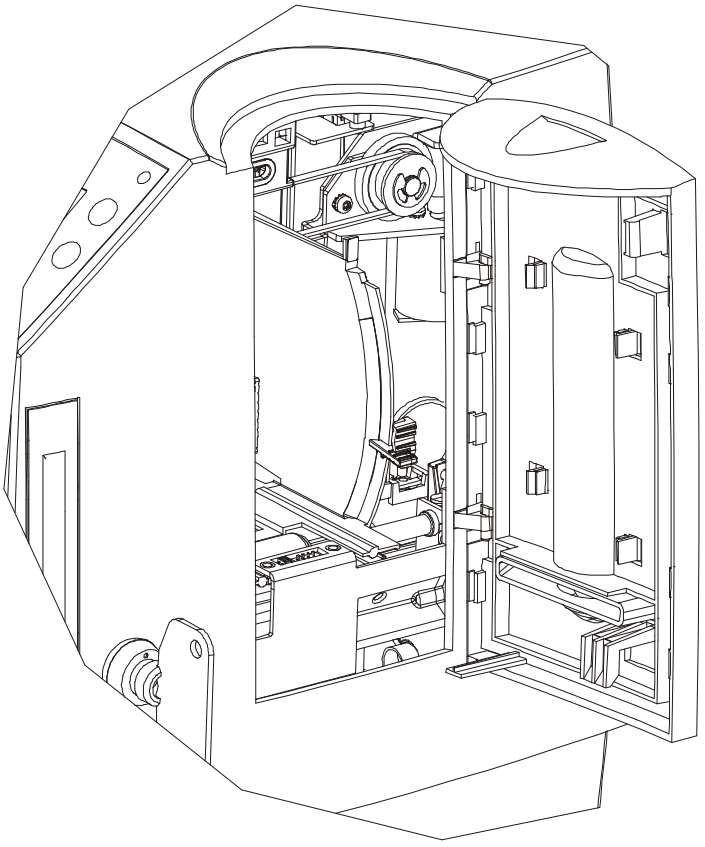


Resolving cards jamming on the Flipper Table (Continued)

Step	Procedure
2	Ensure that the Flipper Table is level. (**Note:** This procedure does not apply to Printers with a Stationary Flipper Table, such as a DTC510/515 without any Encoders installed.) a. Open the Top Cover and remove any cards that are jammed inside the Printer. b. Reset power on the Printer to clear any error messages that are on the LCD. c. Press the MENU button on the LCD. d. Press the **Down Arrow** button and select PRINTER SETUP. e. Scroll through the menu and select FLIPPER OFFSET. f. Select Level. • If the cards are feeding over the Feed Rollers on the card path, adjust the value by +2. **OR** • If the cards are feeding under the Card Feed Path, adjust the value by –2.
3	Ensure that the Flipper Table Tension Spring is providing appropriate tension. a. Open the Top Cover on the Printer. b. Remove the Ribbon. c. Rotate the Flipper Table to an angle perpendicular to the Card Feed Path. d. Using the **Forward** button, insert a card onto the Flipper Table. e. Once fed onto the Flipper Table (D850855), manually pull the card from the Flipper table. (**Note:** There should be sufficient resistance to prevent the card from slipping from the Flipper table.) f. If there is not sufficient resistance, replace the U-shaped spring on the back of the Flipper Table.

Resolving the Card Hopper Jam Error Message

Step	Procedure
1	Clear any obstructions. a. Open the Input Hopper Door, as shown below. b. Remove any cards from the Input Hopper. c. Ensure that there are no cards that are partially fed out of the Card Hopper.
2	Verify the mechanical operation. a. Remove the Top Cover. b. Ensure that the guide belt for the Hopper Travel Assembly (D850253) is intact and moves smoothly. c. Verify that the Hopper Travel Motor is properly meshed with the gear assembly.



Resolving the Card Hopper Empty Error Message

Symptom: The Hopper Empty error message is displayed on the LCD.

Step	Procedure
1	Refill the hopper when convenient.
2	Be sure to load cards with the mag stripe toward the rear of the Printer.
3	Turn the Card Sensor off if it is determined that the Hopper's Card Sensor cannot see these types of cards. (**Note:** The activated Sensor indicates to the Printer that the Card Input Hopper is empty, and the cards will not feed.)

Encoding Errors

Resolving the No Magnetic Encoder Error Message

Symptom: The Printer is receiving encoding data, but the Printer is not configured with this Encoder type.

Step	Procedure
1	Ensure the LCD Setting correct. a. Press Select on the LCD. b. Select Setup Printer and Encoder Settings. c. Change the Mag Setting from None to Installed.
2	If the encoding data was sent in error, check the appropriate software user's manual for encoding instructions.

Resolving the No ENC Response Error Message

Symptom: There is no ENC response.

Step	Procedure
1	Check the Magnetic Offset Setting. a. Press Menu on the LCD. b. Select Setup Printer and Encoder Settings c. Select Magnetic TOF. d. Verify that the current value matches the default value listed on the back of the Printer.
2	Determine if the Main Board is bad. a. Replace the Main Board. See the Replacing the Main Board procedure in Section 5, page **Error! Bookmark not defined.**. b. Determine if the error repeats itself after replacing the Main Board.

Resolving the Failed Magnetic Encode Error Message

Symptom: The Magnetic Stripe was not encoded properly.

Step	Procedure
1	Check to ensure that the cards are loaded with the Magnetic Stripe facing down and towards the back of the Printer.
2	Verify the Driver Settings. a. Ensure that the Coercivity setting in the driver corresponds to the type of cards that are being used. • High Coercivity = 2750 Oersted • Low Coercivity = 300 Oersted (**Note:** See the Using the Magnetic Encoding tab procedure in Section 3, page 182.)

Resolving the No Prox Encoder Error Message

Symptom: The Printer is receiving encoding data, but the Printer is not configured with this Encoder type.

Step	Procedure
1	Ensure the LCD Setting correct. a. Press Select on the LCD. b. Select Setup Printer and Encoder Settings. c. Change the Prox Setting from None to Installed.
2	Check the appropriate software user's manual for specific encoding instructions if the encoding data was sent in error.

Resolving the No Smart Encoder Error Message

Symptom: The Printer is receiving encoding data, but the Printer is not configured with this Encoder type.

Step	Procedure
1	Ensure the LCD Setting correct. a. Press **Select** on the LCD. b. Select the Setup Printer and Encoder Settings. c. Change the Smart Setting from **None** to **Installed**.
2	Check the software user's manual for encoding instructions if the encoding data was sent in error.

Resolving the Failed Smart Encode Error Message

Symptom: The card's smart chip was not encoded properly.

Step	Procedure
1	Check to ensure that the cards are loaded with the smart chip facing up and are being fed into the Printer first.
2	Verify that the card is entering the E-card Docking Station properly.. a. Send an encoding print job from the computer. b. Watch the card feed into the Printer and enter the E-card Docking Station. c. Adjust the Flipper Offset (as needed) if the card is not feeding into the E-card Docking Station properly. See Resolving the Card Jam on the Flipper Table in Section 2, page 89.

Removing the Card Jam in the Printer's Magnetic Encoding Area

Symptom: A card is jammed in the magnetic encoding area of the Printer.

Step	Procedure
1	Clear the jammed card. a. Open the Top Cover. b. Use the arrows on the LCD panel to move the card forward or backward to free the card.
2	Inspect the Card Feed Roller Motor for proper operation. a. Leave the power **ON** and open the Top Lid and Printhead Arm. b. Press the **FORWARD** button to advance the card or the **BACK** button to reverse the card. Use these buttons to move the card through the Printer.
3	Ensure that the cards are feeding into the Encoding Module properly. a. Reset power on the Printer to clear any error messages. b. Select the Menu from the LCD. c. Select the Print Test Image from the menu. See the Printing the Self-test in Section 8, page 254. d. Select the Magnetic Test from the menu. (**Note:** A card is fed from the input hopper onto the Flipper table and rotated into the Encoding Module.) e. If the card appears to jam against the components of the encoding assembly, adjust the Encoder angle of the Flipper Offset. See the Resolving the Card Jam on the Flipper Table procedure in Section 2, page 89.
4	Adjust the Flipper Offset. a. Select Menu on the LCD display. b. Select Setup Printer. c. Select Flipper Offset. d. Select Encoder Angle. e. Change the setting on the small increments. (**Note:** A negative adjustment will lower the side of the Flipper Table closest to the Exit Hopper.) f. Press **Select** to save the new value.

Removing the Card Jam in the Printer's Smart Card Encoding Area

Symptom: A card is jammed in the Smart Card encoding area of the Printer.

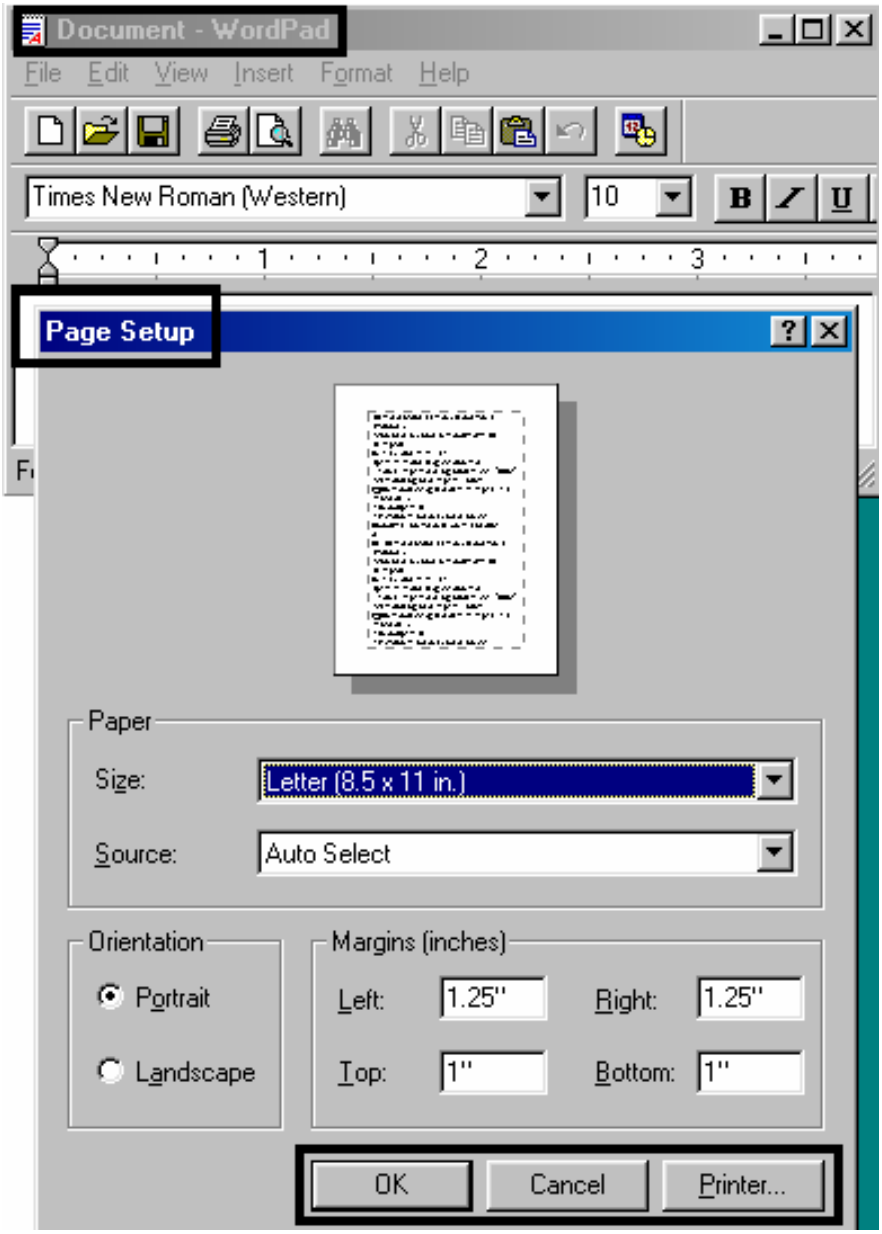
Step	Procedure
1	Clear the jammed card. a. Open the Top Cover. b. Use the arrows on the LCD panel to move the card forward or backward to free the card.
2	Inspect the Card Feed Roller Motor for proper operation. a. Leave the power **ON** and open the Top Lid and Printhead Arm. b. Press the **FORWARD** button to advance the card or the **BACK** button to reverse the card. (**Note:** Use these buttons to move the card through the Printer.)
3	Adjust the Flipper Offset. a. Select Menu on the LCD display. b. Select Setup Printer c. Select Flipper Offset. d. Select Encoder Angle e. Change the setting on small increments. (**Note:** A negative adjustment will lower the side of the Flipper Table closest to the Exit Hopper.) f. Press **Select** to save the new value.

Resolving the Printer not reading Encoded Magnetic Track Data

Step	Procedure
1	Verify that the cards are loaded properly with the Magnetic Stripe facing down and towards the back of the Printer.
2	Verify that the card is encoded with magnetic data by using a magnetic imager or developer solution.
3	Use **WordPad** (a Windows 95/ 98/ ME/ NT/ 2000/XP word processing program in the Accessories Program Group), as shown on the next page. a. Open the program and type in: ~1%JULIEANDERSON^1234567890? b. Select **File > Page Setup** and click on the **Printer** button. c. Ensure that the DTC500 Series Card Printer is selected and click on **OK.** d. Change all the margin settings to **zero (0)** and click on **OK.** e. Go to **File** on Menu Bar and select **Print**. (**Note:** The Printer should then feed a card into the Encoder and magnetically encode it.)
4	**Caution:** Ensure that the Coercivity of the cards matches the setting in the driver.
5	Compare the settings for the card reader to the settings in the driver.
6	**Caution:** Ensure that the Magnetic Stripe on the card is free of scratches or voids.

Resolving the Printer not reading Encoded Magnetic Track Data (continued)

See the previous procedure in this section.



Resolving the Magnetic Stripe Data being printed on a Card problem

Step	Procedure
1	Confirm that the application is formatting the magnetic string correctly. See the Sending the Track Information procedure in Section 3, page 196.
2	Use **WordPad** (a Windows 95/ 98/ ME/ NT/ 2000/XP word processing program in the Accessories Program Group). See previous page for display. a. Open the program and type: "~1%JULIEANDERSON^1234567890?" b. Select **File > Page Setup** and click on the **Printer** button. c. Ensure that the DTC500 Series Card Printer is selected and click **OK.** d. Change all the margin settings to **zero (0)** and click **OK.** e. Go to **File** on Menu Bar and select **Print**. (**Note:** The Printer should then feed a card into the Encoder and magnetically encode it.)

Printing Process Errors

Resolving the Ribbon Alignment Error Message

Step	Procedure
1	Check that the Ribbon is loaded properly and completely seated on the hubs.
2	Check that the marks on the Ribbon are complete.
3	a. Check the Motor operation to ensure that the Ribbon moves in both **Forward** and **Backward** directions on **Power Up**. b. Check the Ribbon types using the LCD.
4	Test the Ribbon Sensor. a. Remove the back cover and locate the connector labeled J16 on the main board. b. Check the voltage for each of the five (5) Ribbon Sensors at their connection to the Main Board. c. Use a Multimeter to ground the negative lead to the chassis and put the positive lead on pins 3, 5, 7, 9 and 11 of J16 on the main board. d. Place a RibbonTraq™ mark over the Ribbon Sensor. (**Note:** The voltage should be less than 1 VDC.) e. Remove the RibbonTraq mark from the Ribbon Sensor. (**Note:** The voltage should be greater than 4 VDC.) f. Replace the Sensor if the voltages are incorrect. See the Replacing the Ribbon Sensor Array Assembly (840108) procedure in Section 5, page **Error! Bookmark not defined.**.
5	Install a new Ribbon and press the **Resume** button to continue if the Ribbon is out.
6	Clear the jam and reboot the Printer if the Ribbon is jammed.
7	Repair the Ribbon. a. Repair the Ribbon by taping it back on to the take-up core if the Ribbon is broken. b. Press the **Resume** button to continue or **Cancel** to reset the Printer.

Resolving the Print Ribbon Error Message

Symptom: The Print Ribbon is not installed properly or it has run out, jammed, broken or been damaged.

Step	Procedure
1	See Resolving Ribbon Alignment Errors in Section 2, page 101, for details.

Resolving the Print Ribbon Out Error Message

Symptom: The Print Ribbon has run out.

Step	Procedure
1	Install a new Ribbon and press **Resume** to continue.

Resolving the Ribbon Jam/Broke Error Message

Symptom: An error message is displayed on the LCD and the Ribbon is broken.

Step	Procedure
1	Verify that the Print TOF and Print EOF are set correctly. a. If the break occurs before anything is printed to the card, reduce the Print TOF by 5. b. If the break occurs after the yellow panel is transferred to the card, reduce the Print EOF by 5. c. Print a self-test to verify operation. See Printing the Self-test in Section 8, page 254.

Resolving the Wrong Print Ribbon Error Message

Symptom: The Print Ribbon (installed in the Printer) does not match the Ribbon type (selected in the Printer driver).

Step	Procedure
1	Verify that the Ribbon is installed properly by ensuring that: • The Ribbon is loaded with the supply side closest to the Card Input Hopper. • The Ribbon is rolling from the bottom of the spool to the bottom of the take up spool.
2	Verify if the Driver has been set correctly. a. Open the Printer control panel from the computer. • If using Windows 95/98/ME, right click on the DTC500 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the DTC500 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the DTC500 Series Card Printer and select **Printing Preferences**. b. Click on the Device Option tab. See the Using the Device options tab procedure in Section 3, page 154. c. Verify that the Ribbon Type setting that is listed matches the Ribbon that is installed in the Printer. **Note:** It may be possible to have Driver settings that are different from those found in the Printer control panel within the application.) d. Check any page setup functions in the software to verify that the Ribbon type matches.

Resolving the Unknown Ribbon Type Error Message

Symptom: The Printer is unable to determine the type of Ribbon installed.

Step	Procedure
1	Verify the Ribbon type. a. Ensure that the print Ribbon installed in the Printer is a DTC Ribbon. (**Note:** Although similar in appearance, an HDP Ribbon installed in a DTC Printer will produce an Unknown Ribbon Type error message.)
2	Test the Ribbon Sensor (840108). a. Remove the back cover and locate the connector labeled J16 on the main board. b. Check the voltage for each of the five (5) Ribbon Sensors at their connection to the main board. c. Use a Multimeter to ground the negative lead to the chassis and put the positive lead on pins 3, 5, 7, 9 and 11 of J16 on the main board. d. Place a RibbonTraq™ mark over the Ribbon Sensor. (**Note:** The voltage should be less than 1 VDC.) e. Remove the RibbonTraq mark from the Ribbon Sensor. (**Note:** The voltage should be greater than 4 VDC.) f. Replace the Sensor if the voltages are incorrect. See the Replacing the Ribbon Sensor Array Assembly (840108) procedure in Section 5, page **Error! Bookmark not defined.**.

Resolving the Headlift Error Message

Symptom: The Printer was unable to raise or lower the Printhead.

Step	Procedure
1	Press the **Resume** button to retry.
2	If the Headlift does not rotate, check the Headlift Motor (A000124) to ensure that it is running.
3	If the Headlift Motor is not running, replace the Headlift Motor. See the Replacing the Headlift Motor (A000124) procedure in Section 5, page **Error! Bookmark not defined.**.
4	If the head cycles but does not stop at the position every time, check the Headlift Sensor as described in Sensor Testing in Section 7, page 248.
5	If the Headlift Sensor is failing, replace it. See the Replacing the Headlift Sensor (A000126) in Section 5, page **Error! Bookmark not defined.**.

Resolving the Printer pausing between panels error

Symptom: The Printhead Fan is not operating properly.

Step	Procedure
1	Confirm that the fan operates correctly. a. Upon power up, the fan should run momentarily and shut off. b. Verify that the fan is plugged into the Main Print Board properly on J13.
2	Check the Printhead fans for pinched wires. a. Inspect the wires that are routed under the top cover and through to the back of the board to ensure that they are not pinched.
3.	Verify if the thermal Regulator on the Printhead has failed. a. Remove the Printhead and reseat cable connections. See the Removing the Original Printhead Assembly procedure in Section 5, page **Error! Bookmark not defined.**. b. If problem persists, replace with a new Printhead. See the Replacing the Printhead Components procedure in Section 5, page **Error! Bookmark not defined.**.
4	Ensure that the Printer has received data (at the speed that it requires). See Communication Errors in Section 2, page 72.

Resolving the Printhead Temp Error Message

Symptom: The Printhead Temperature Regulator is not functioning properly.

Step	Procedure
1	Reboot the Printer. • If the problem persists, remove the Printhead and ensure that the Printhead Cables are seated properly. See the Replacing the Printhead Components procedure in Section 5, page **Error! Bookmark not defined.**. • Remove the back cover (as needed) to verify the Printhead Cable connection to the Main Print Board. See the Reviewing the Main Board Components procedure in Section 5, page **Error! Bookmark not defined.**.
2	Replace the Printhead if after checking the Printhead Cable connection at both the Printhead and the Main Print Board (the error is still displayed on startup). See the Replacing the Printhead Components procedure in Section 5, page **Error! Bookmark not defined.**.
3	Confirm that the cooling fan above the Printhead is operating properly. (**Note:** Upon power up, the fan should run momentarily and shut off.)
4	Replace the Main Print Board if problem still remains. See the Replacing the Main Board procedure in Section 5, page **Error! Bookmark not defined.**.

Resolving the Flipper Alignment Error Message

Symptom: A Flipper Alignment error was displayed on the LCD.

Step	Procedure
1	Check for any obstruction. a. Open the Top Lid. b. Remove the Ribbon. c. Ensure that there are no obstructions.
2	Verify the Motor operation. a. Test the Flipper Table Home Sensor (140407) by entering the FLIPPER OFFSET in the PRINTER SETUP menu on the LCD display. b. Ensure that Level is selected and press the **Select** button. c. without making any adjustment, press the **Select** button. (**Note:** This should cause the Flipper Table to attempt to home itself.)
3	Test the Flipper Home Sensor (140407). a. Remove the screws from the rear cover. b. Tilt the back cover outwards from the Printer c. Using a Digital Voltmeter, connect the negative lead to its ground. d. Connect the positive lead to Pin 4 of J7. • If **blocked**, the voltage should read ≈ 3.2 VDC. • If **unblocked**, the Sensor should read > .4 VDC. e. If the voltages from the Flipper Home Sensor do not match, replace the Sensor. See the Replacing the Flipper Home Sensor (140407) procedure in Section 5, page **Error! Bookmark not defined.**.

Firmware Errors

Resolving the Update Firmware Now

The system Firmware must be updated for one of these reasons:

- The previous Firmware update was unsuccessful.
- The program data is corrupt.
- The Printer model does not correspond with the installed Firmware model number.
- The revision number of the Firmware does not match on all system components.

See the Updating the Printer's Firmware procedure in Section 9, page 275.

Resolving an Upgrade Failed error

Symptom: An Upgrade Failed error is displayed on the LCD during the upgrade process

Step	Procedure
1	Determine if there is interference from an external device. a. Do not use an A/B Switch Box, dongle key or other peripheral in line with the parallel cable. b. If using a Switch Box, dongle key or other peripheral, remove it while testing communication between the computer and the Printer. c. If needed, replace the Switch Box, dongle key or other peripheral (once it is determined that the cause of the interference is not the Switch Box or peripheral). See the Updating the Main Firmware procedure in Section 9, page 275. **Alternative:** Add a second Parallel Port into the computer (if a second Printer is required).

Continued on the next page.

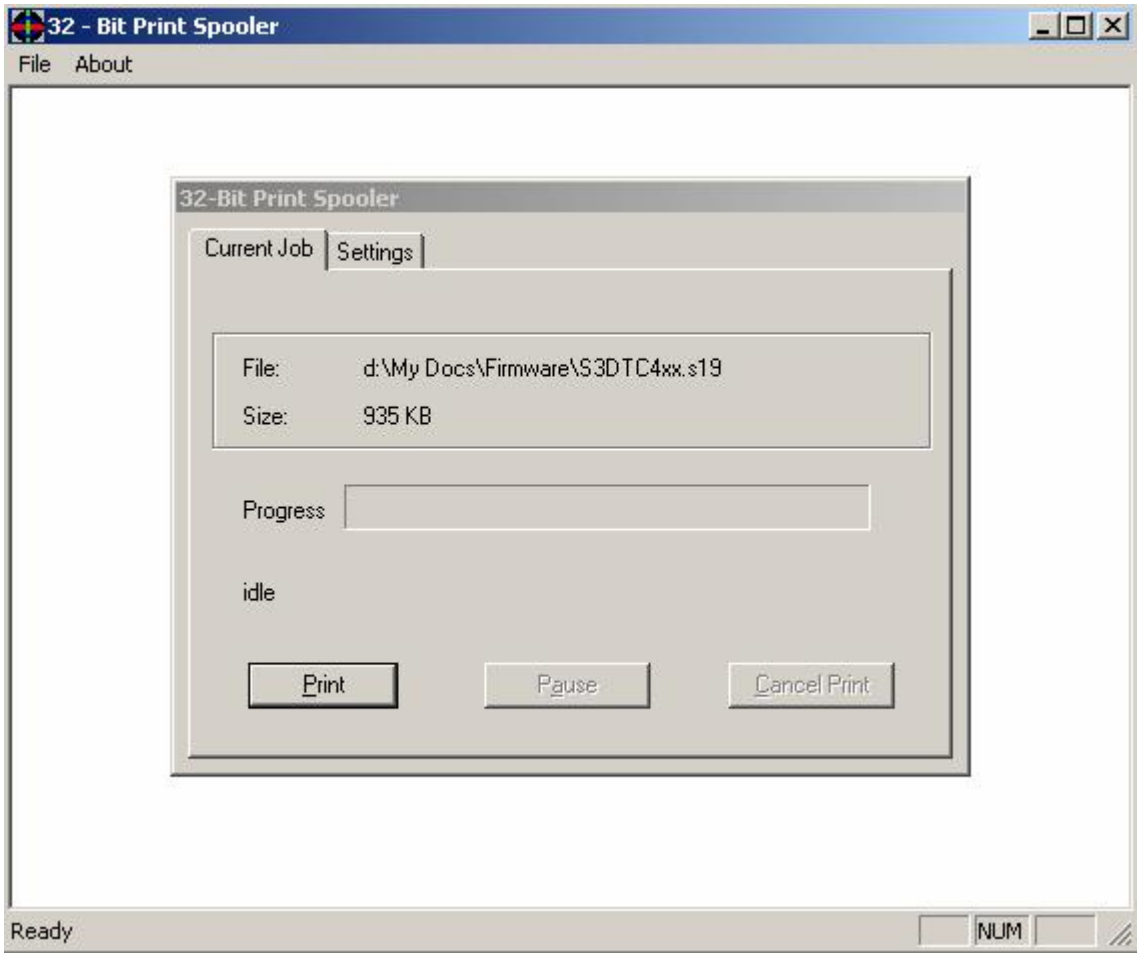
Resolving an Upgrade Failed error (continued)

Step	Procedure
2	Ensure that the proper procedure is being used. See the Firmware Updater Application Program procedure in Section 9, page 272. a. Follow the instructions on the attached DTC Firmware Upgrade Guide to insure that the correct data is being transferred to the Printer. b. If the Firmware Update Program is corrupt, then uninstall the entire program from the PC and download the newest version of the program and install it from Fargo's web site via: http://www.fargo.com See the Downloading Firmware Updates procedure in Section 9, page 274. See the next page.
3	Update from the 32-bit Print Spooler. a. Install and open the 32-bit Print Spooler program. b. Click on **File** in the menu and select the **Open** option. c. Point this window to the directory (where the latest Firmware is located on the PC). (**Note:** This Firmware file will always have a *.s19 extension) d. Once the Firmware file is selected, the Printer needs to be restarted into SYSTEM UPGRADE mode. Follow this procedure: • At the PRINTER READY screen, select the **Menu** option. • Press the DOWN arrow, until the brackets are around the "System Upgrade". • Press the **Select** option. • Select YES when the screen displays: Are you sure you want to continue? (**Note:** When the Printer reboots, it will be in System Upgrade mode and will begin to count up from 0 seconds to 60 sec.) • Click the **Print** button on the 32-bit Print Spooler as the DTC LCD display begins its countdown. (**Note:** The DTC Display should then run through its Update process. See the next page.) e. Reboot the Printer after it has completed the process.

Continued on the next page

Resolving an Upgrade Failed error (continued)

See the previous procedure in this section.



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Resolving a Program Exception Error

Symptom: An error has occurred in the Printers Firmware and a Program Exception Error.

Step	Procedure
1	Restart the Printer and attempt to print the card again. a. If no Error is displayed, continue printing. b. If a Program Exception is displayed again, continue to step 2.
2	Reload the Firmware. See the Updating the Printer's Firmware in Section 10, page 275.
3	Replace the Main Board. See the Replacing the Main Board procedure in Section 5, page **Error! Bookmark not defined.**.

Diagnosing the Image Problems

Resolving the Pixel failure problems

Symptom: A thin line or scratch travels the entire length of the card.

Step	Procedure
1	Check the card stock for scratches. Replace the cards (as needed).
2	Examine the Printhead for visible damage.
3	Clean the Printhead. a. Remove watches, rings, bracelets and other jewelry. b. Open the Top Cover and Printhead Arm. c. Use a Printhead Cleaning Pen from the Printer Cleaning Kit to firmly wipe back and forth across the surface of the Printhead. d. Close the Top Cover and Printhead Arm once the Printhead is completely dry.

Resolving the Pixel failure problems (continued)

Step	Procedure
4	Replace the Cleaning Tape. a. Open the Printer's Top Cover. b. Pull the Cleaning Cartridge out of the Printer. c. Open the Cleaning Cartridge by pressing on the release tab of the clear Cleaning Cartridge Cover and pulling the cover up. d. Pull up on the used cleaning tape and lift it and the two Tape Rollers out of the Cartridge. (**Note:** The Cleaning Roller can stay within the Cartridge.) e. Insert the two Tape Rollers into the new Cleaning Tape loop. f. Place the Tape Rollers and the new tape back into the cartridge. • Be sure to orient the new tape loop so that it extends over the Cleaning Roller once installed. • Place the Roller closest to the cartridge's handle in first and then press the second Roller into place. g. Set the clear Cleaning Cartridge Cover back into place. • Be sure the tabs on the cover are seated properly into the slots on the cartridge as shown below. • When in place, press down on the top of the cover until it snaps shut. h. Pull on the tape loop's tab to remove the backing from the tape. i. Insert the Cleaning Cartridge back into the Printer. • Be sure to push down on the cartridge until it clicks into place. • If the cartridge is not inserted properly, the Printer will not feed cards.

Continued on the next page

Resolving the Pixel failure problems (continued)

Step	Procedure
5	Clean the Platen Rollers. a. Leave the Printer power ON and open the Top Cover and Printhead Arm. b. Remove the print Ribbon. c. Locate the Print Platen Roller, as shown below. d. Use a Cleaning Pad from the Printer Cleaning Kit to wipe the Roller clean. e. Locate the Transfer Platen Roller, as shown below. f. Use a Cleaning Pad from the Printer Cleaning Kit to wipe the Roller clean. • Press the **FORWARD** and **BACK** buttons to move the Roller back and forth while cleaning. g. Replace the printing supplies. h. Close the Print and Transfer Stations after the Rollers are clean and completely dry.

Resolving the Card surface debris problems

Symptom: Prints have spots (white or colored voids) and/or dust on them, as shown after Step 4 in this procedure.

Step	Procedure
1	Be sure the cards are clean and stored in a dust-free environment. **Caution:** Cards with embedded contaminants in the surface should not be used.
2	Clean the inside of the Printer. a. Open the Top Cover and Printhead Arm. b. Remove the print Ribbon from the Printer. c. Use a can of compressed air to blow out all visible areas of the Printer interior. d. Use a cleaning pad from the Printer Cleaning Kit to wipe out all visible areas inside the Printer. e. Remove any debris that may be inside. **Caution:** Be extremely careful not to let any alcohol drip inside the Printer! f. Re-install the printing supplies. g. Close the Top Cover and Printhead Arm.

Resolving the Card surface debris problems (continued)

Step	Procedure
3	Replace the Cleaning Tape. a. Open the Printer's Top Cover. b. Pull the Cleaning Cartridge out of the Printer. c. Open the Cleaning Cartridge by pressing on the release tab of the clear Cleaning Cartridge Cover and pulling the cover up. d. Pull up on the used cleaning tape and lift it and the two Tape Rollers out of the Cartridge. (**Note:** The Cleaning Roller can stay within the Cartridge.) e. Insert the two Tape Rollers into the new Cleaning Tape loop. f. Place the Tape Rollers and the new tape back into the cartridge. (**Note:** Be sure to orient the new tape loop so that it extends over the Cleaning Roller once it is installed.) g. Place the Roller closest to the cartridge's handle. h. Press the second Roller into place. i. Set the clear Cleaning Cartridge Cover back into place. **Caution:** Be sure the tabs on the cover are seated properly into the slots on the cartridge as shown below. j. When in place, press down on the top of the cover until it snaps shut. k. Pull on the tape loop's tab to remove the backing from the tape. l. Insert the Cleaning Cartridge back into the Printer. **Caution:** Be sure to push down on the cartridge until it clicks into place. If the cartridge is not inserted properly, the Printer will not feed cards.

Resolving the Card surface debris problems (continued)

Step	Procedure
4	Clean the Platen Roller. a. Leave the Printer power ON and open the Top Cover and Printhead Arm. b. Remove the print Ribbon. c. Locate the Platen Roller, as shown below. d. Use a Cleaning Pad from the Printer Cleaning Kit to wipe the Roller clean. e. Press the **FORWARD** and **BACK** buttons to move the Roller back and forth while cleaning. f. Replace the printing supplies and close the Top Cover and Printhead Arm after the Rollers are clean and completely dry.

Resolving the incorrect Image Darkness problems

Symptom: Printed cards are too dark or too light, as shown on the next page.

Step	Procedure
1	Run a Self-Test from the Printer. See the Printing the Self-test in Section 8, page 254. a. Select Menu from the LCD. b. Select Print Test Image from the menu. c. Select Gray/Align Self-test from the Menu. d. If the Self test card does not appear to have the same darkness issues, continue to step 2 (Adjusting the Dye sub intensity). e. If the Self test card does appear to have the same darkness issues, continue to step 3 (Adjusting the image darkness).
2	Adjust the Dye-Sub Intensity setting within the Image Color tab of the Printer driver. See the Using the Image Color tab procedure in Section 3, page 167. a. Open the Printer control panel from the computer. • If using Windows 95/98/ME, right click on the DTC500 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the DTC500 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the DTC500 Series Card Printer and select **Printing Preferences**. b. Click on the Image Color tab. • If the image is too light, adjust the Dye-Sub Intensity to a more positive value. • If the Image is too dark, adjust the Dye-Sub Intensity to a more negative value. **OR** Correct the Image Darkness in the LCD. See the Adjusting the Image Darkness procedure in Section 8, page 264. a. Select Menu from the LCD. b. Select Setup Printer and then select Image Darkness. • If the image is too light, adjust the current value to a more positive number. • If the Image is too dark, adjust the current value to a more negative number.

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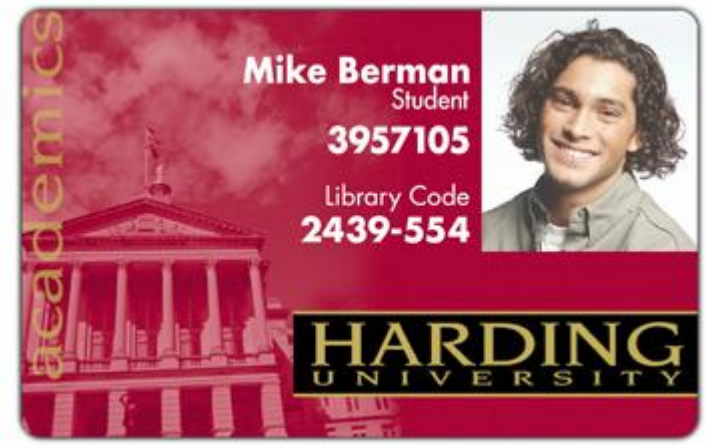
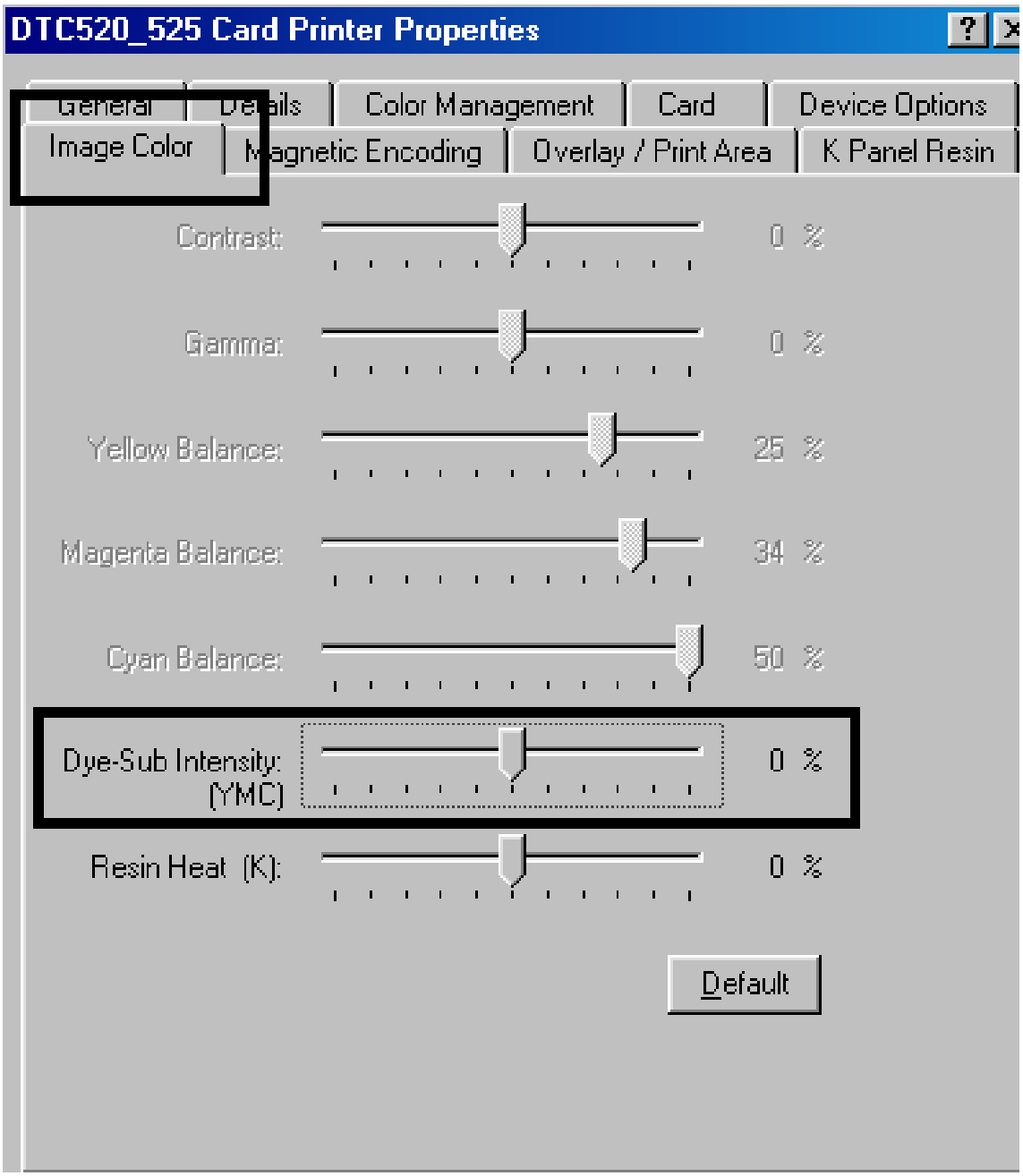
Resolving the incorrect Image Darkness problems (continued)

See previous procedure in this section.



Resolving the incorrect Image Darkness problems (continued)

See previous procedure in this section.



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Resolving the Ribbon wrinkle problems

Symptom: Printed cards have off-colored lines or streaks on them, as shown on the next page.

Step	Procedure
1	Confirm that the Printer is using the most current driver from: http://www.fargo.com
2	Adjust the Dye-Sub Intensity setting within the Image Color tab of the Printer driver. See the Using the Image Color tab procedure in Section 3, page 167. a. Open the Printer control panel from the computer. • If using Windows 95/98/ME, right click on the DTC500 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the DTC500 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the DTC500 Series Card Printer and select **Printing Preferences**. b. Click on the Image Color tab. c. Adjust the Dye-Sub Intensity to a more negative value in increments of 10%. **OR** Correct the Image Darkness in the LCD. See the Adjusting the Image Darkness procedure in Section 8, page 264. a. Select Menu from the LCD. b. Select Setup Printer and then select Image Darkness. c. Adjust the current value to a more negative number in increments of 2.
3	Adjust the Ribbon Tension. See the Adjusting the Ribbon Tension procedure in Section 8, page 262. a. Select Menu from the LCD. b. Select Setup Printer and then select Ribbon Tension. c. Adjust the current value to a more positive number.

Continued on the next page

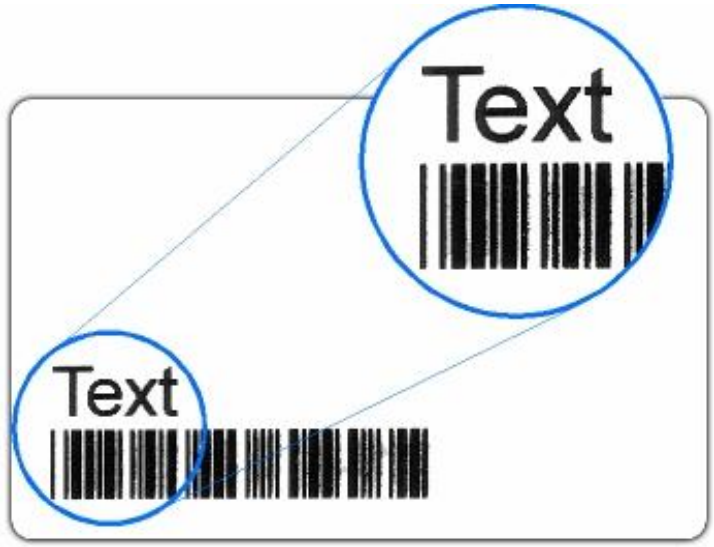
Resolving the Ribbon wrinkle problems (continued)

Step	Procedure
5	Check the Printhead for debris and burrs.

Resolving the excessive Resin Printing problems

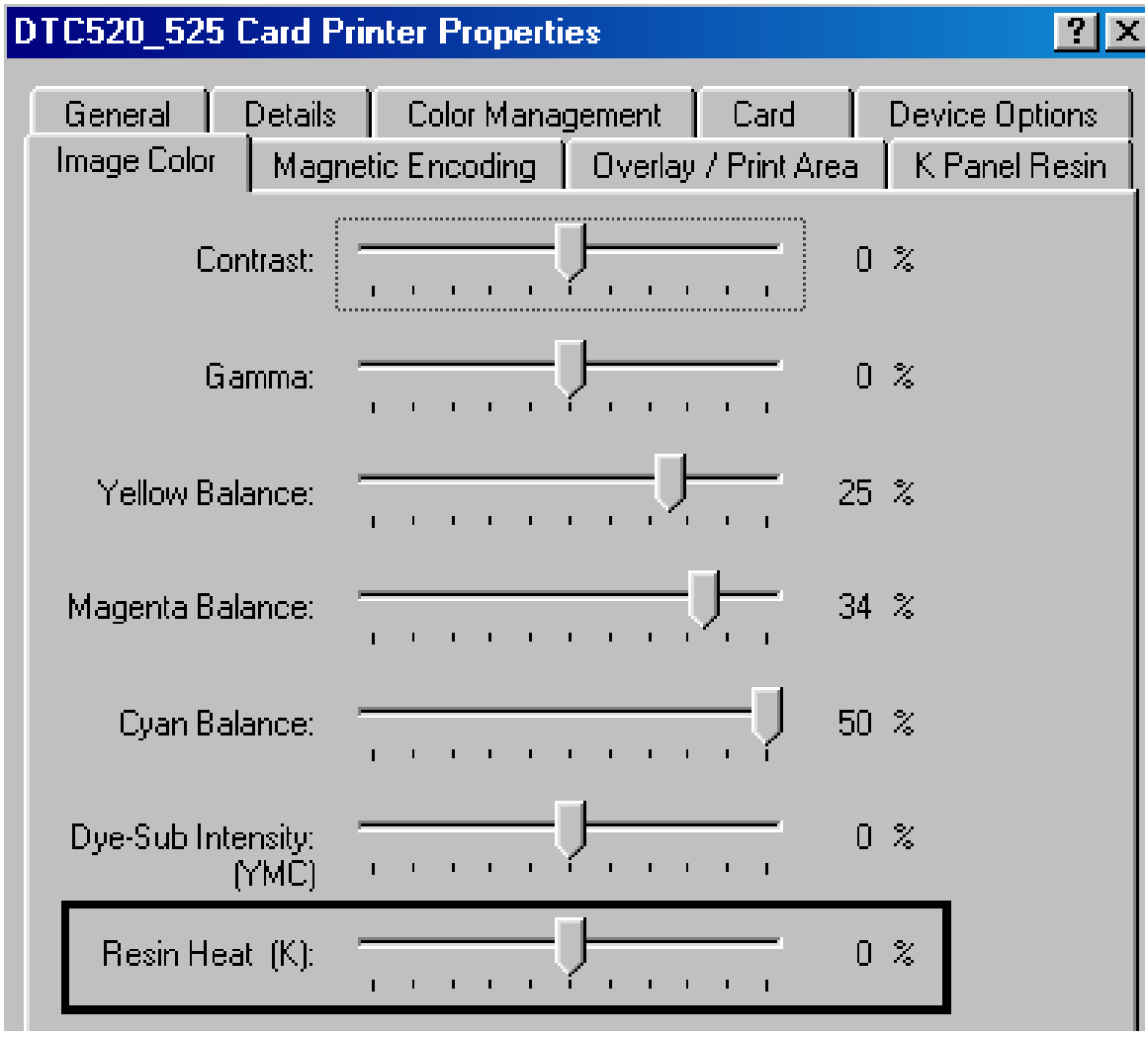
Symptom: Black resin text and barcodes appear smeared or too thick, as shown below.

Step	Procedure
1	Reduce the Resin Heat setting within the Image Color tab of the Printer driver. See the Using the Image Color tab procedure in Section 3, page 167. See the next page. a. Open the Printer Control Panel from the computer. • If using Windows 95/98/ME, right click on the DTC500 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the DTC500 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the DTC500 Series Card Printer and select **Printing Preferences**. b. Click on the Image Color tab. c. Adjust the Resin Heat to a more negative value in increments of 5%. **OR** Correct the Image Darkness in the LCD. See the Adjusting the Image Darkness procedure in Section 8, page 264. See the next page. a. Select Menu from the LCD. b. Select Setup Printer and then select Image Darkness. c. Adjust the current value to a more negative number in increments of 2.



Resolving the excessive Resin Printing problems (continued)

See the previous procedure in this section.



Resolving the incomplete Resin Printing problems

Symptom: Black resin text and barcodes appear faded or too light, as shown below.

Step	Procedure
1	Reduce the Resin Heat setting within the **Image Color** tab of the Printer driver. See the Using the Image Color tab procedure in Section 3, page 167. See the next page. a. Open the Printer control panel from the computer. • If using Windows 95/98/ME, right click on the DTC500 Series Card Printer Icon and select **Properties**. • If using Windows NT 4.0, right click on the DTC500 Series Card Printer and select **Document Defaults**. • If using Windows 2000/XP, right click on the DTC500 Series Card Printer and select **Printing Preferences**. b. Click on the Image Color tab. c. Adjust the Resin Heat to a more positive value in increments of 5%. **OR** Correct the Image Darkness in the LCD. See the Adjusting the Image Darkness procedure in Section 8, page 264. See the next page. a. Select Menu from the LCD. b. Select Setup Printer and then select Image Darkness. c. Adjust the current value to a more positive number in increments of 2.

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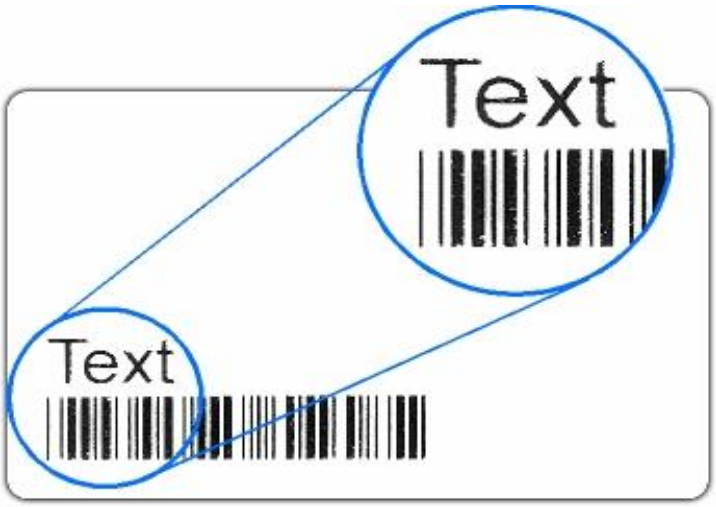
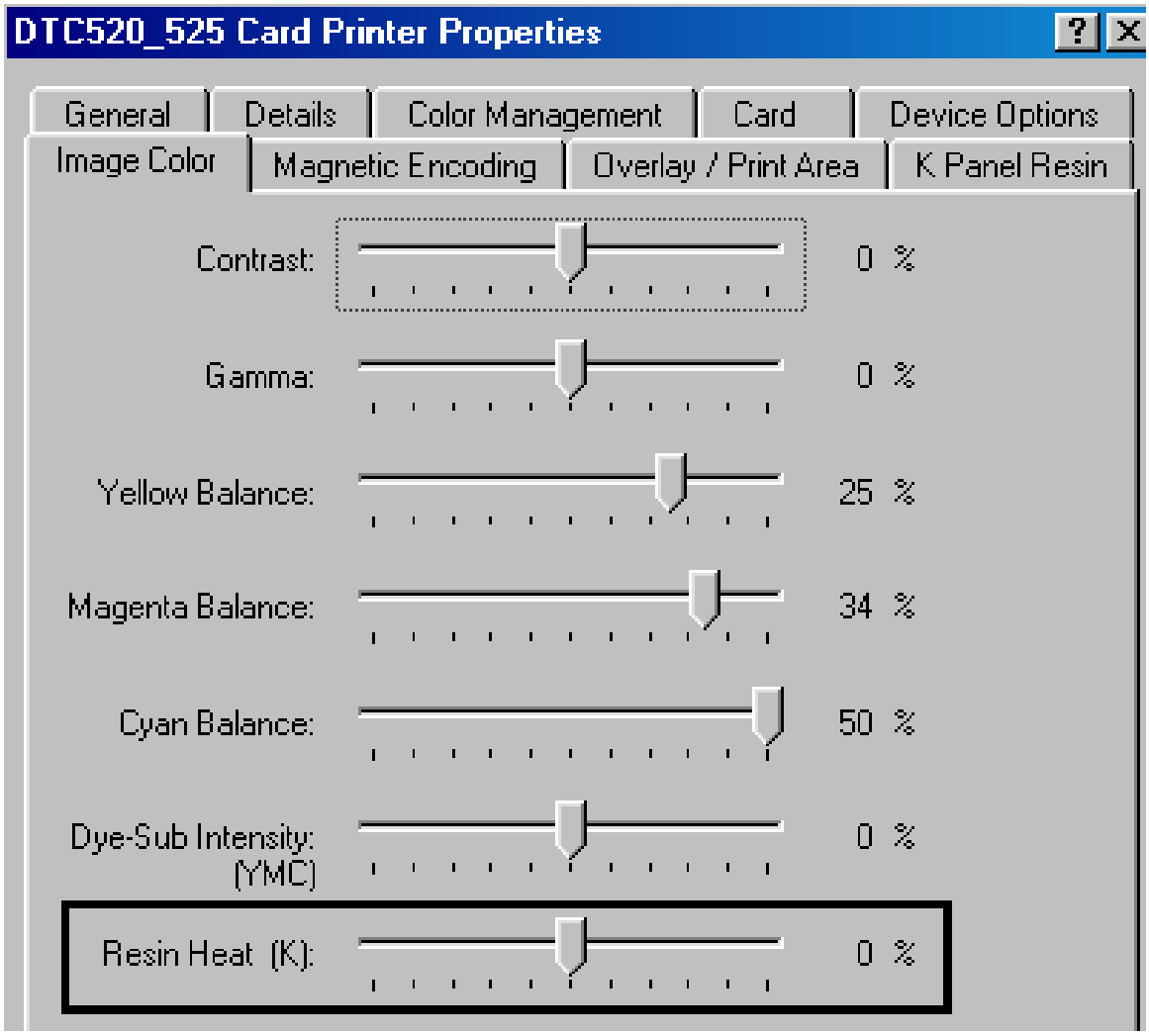


Resolving the incomplete Resin Printing problems (continued)

See the previous procedure in this section.



Resolving the cut off or off-center Card Image problems

Symptom: The printing is cut off or is not centered on the card. This causes a white border to appear on the card, as shown below.

Step	Procedure
1	Use the Image Position within the Card tab of the Printer driver to precisely center the image. See Using the Image Position button in Section 3, page 225.

Resolving the poor Image Quality problems

Symptom: The photos on the cards look pixilated or grainy, as shown below.

Step	Procedure
1	Use a high-resolution, 24-bit color image to always capture an image: • at a 24-bit color setting • at 300 dpi • at the same size that it will be printed on the card, (as captured either with a scanner or with a digital camera) **Caution:** If a small or low-resolution image is stretched or blown up, a pixilated or grainy effect will occur when printing, as shown below.

Good

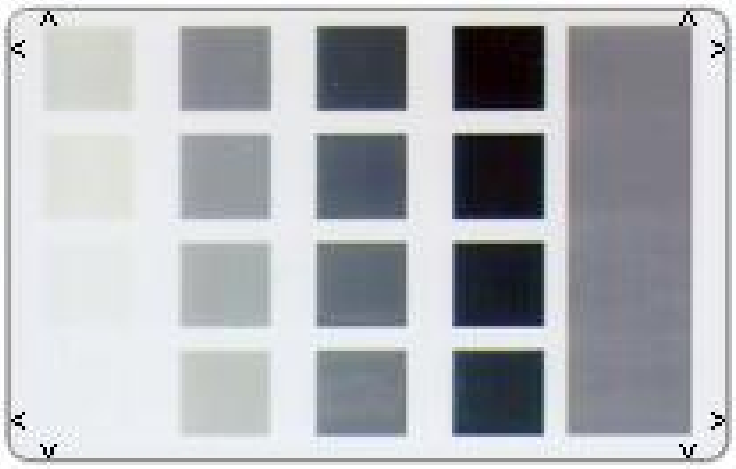
Bad

Printing a Test Image

Step	Procedure
1	Choose **Print Test Image** to select a preset test image. (**Note:** These images help to determine if the Printer is functioning properly.)
2	Scroll to the desired test image from the **Select Test Image** options and press the **Select** button.

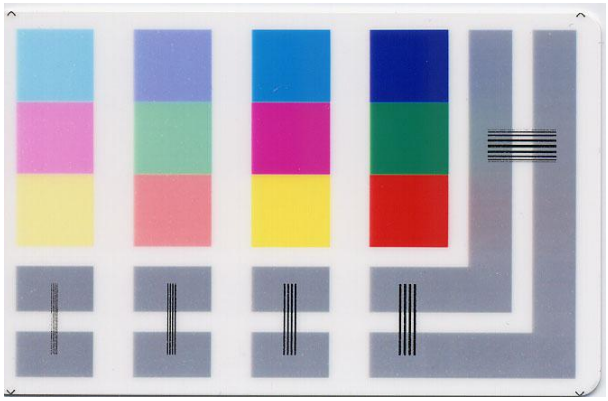
Reviewing the Gray/Align YMC/K Self-Test

Step	Procedure
1	Use this card to determine Image Placement and confirm that the Printer is working properly. (**Note:** The image consists of sixteen (16) gray scale boxes and alignment arrows.)
2	Adjust the Image Placement. (**Note:** The gray boxes are composed from a composite of YMC color panels.)



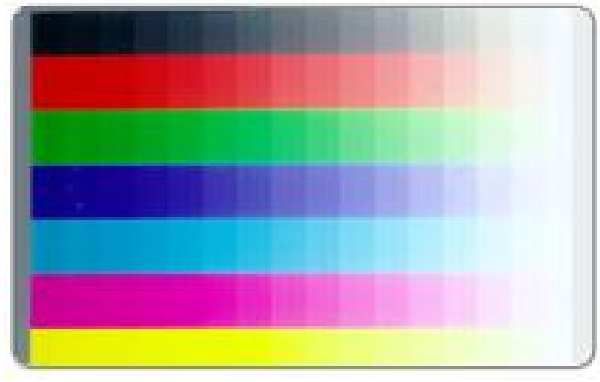
Reviewing the Color/Resin YMCK Self-Test

Step	Procedure
1	Use this card to determine Image Placement and confirm that (a) the image colors are properly reproduced and (b) the Resin Panel is printing properly. (**Note:** The Image consists of twelve spot colors, YMC and RGB, as well as gray density bars and thin resin lines.)



Reviewing the Color Bars YMC Self-Test

Step	Procedure
1	Use this card to confirm that image colors are properly reproduced. Image consists of sixteen graduated steps of RGB and YMCK. (**Note:** This print will provide maximum image size, giving complete card coverage on a CR-80 sized card.)



Reviewing the Card Count Self-Test

Step	Procedure
1	Use this card to view counts for Card Count (CC), Pass Count (PC) and Transfer Count (TC) and Lamination Count (LC). • The **Card Count** is the total number of cards the Printer has produced. **Pass Count** is the total number of print passes made by the Printhead. (**Note:** A pass is measured each time a single Ribbon panel is printed or passes beneath the Printhead.) • The **Transfer Count** is the total number of times the Printer transfers an image to a card.

Reviewing the Magnetic Test option

Step	Procedure
1	Use this option only applies if a Magnetic Encoding module is installed in the Printer. (**Note:** The Printer will feed, encode and eject a card. Be sure to have high Coercivity cards installed when running this test.)

Section 3: Card Lamination Module

The purpose of this section is to provide the User with specific information on Printer adjustment procedures.

Safety Messages (review carefully)

Symbol	Critical Instructions for Safety purposes
Danger:	**Failure to follow these installation guidelines can result in death or serious injury.** Information that raises potential safety issues is indicated by a warning symbol (as shown to the below). • **To prevent personal injury**, refer to the following safety messages before performing an operation preceded by this symbol. • **To prevent personal injury**, always remove the power cord prior to performing repair procedures, unless otherwise specified. • **To prevent personal injury**, make sure only qualified personnel perform these procedures.
Caution:	**This device is electrostatically sensitive**. **It may be damaged if exposed to static electricity discharges.** Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below). • **To prevent equipment or media damage**, refer to the following safety messages before performing an operation preceded by this symbol. • **To prevent equipment or media damage**, observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the Circuit Board and Printhead Assemblies. • **To prevent equipment or media damage**, always wear an appropriate personal grounding device (e.g., a high quality wrist strap grounded to avoid potential damage). • **To prevent equipment or media damage**, always remove the Ribbon and Cards from the Printer before making any repairs, unless otherwise specified. • **To prevent equipment or media damage**, take jewelry off of fingers and hands, as well as thoroughly clean hands to remove oil and debris before working on the Printer.

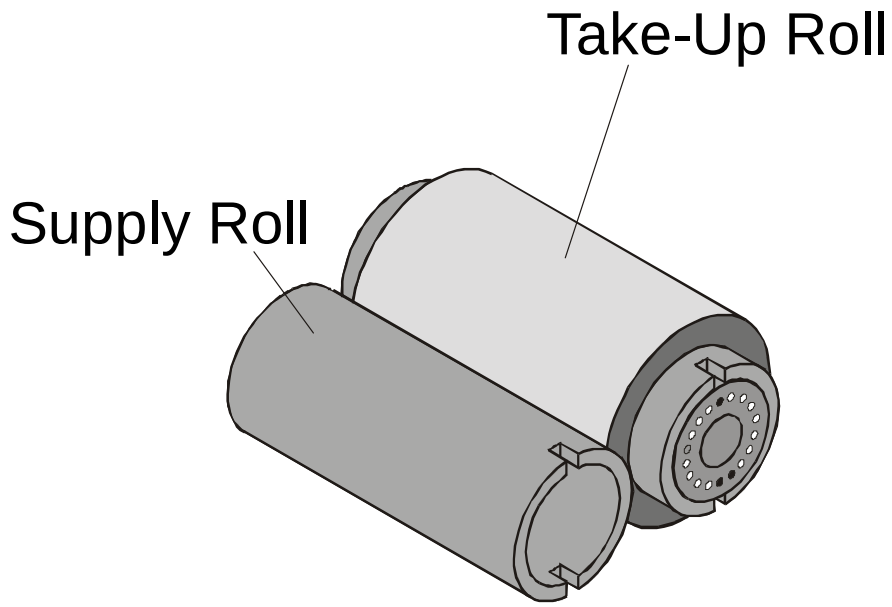
Loading the Overlaminate

The loading process for both the Thermal Transfer Film and the PolyGuard overlaminate material is the same. Refer to the following steps to load either type of overlaminate into the Printer.

Danger: Do not touch the metal lamination shield or the Lamination Roller when loading overlaminate. You will burn yourself.

Step	Procedure
1	Open the lamination module's Top Cover and Lamination Station.
2	Remove the overlaminate from its packaging.
3	The supply end of the overlaminate roll is the side containing the fresh, unused portion of the overlaminate. The take-up end is the other side.

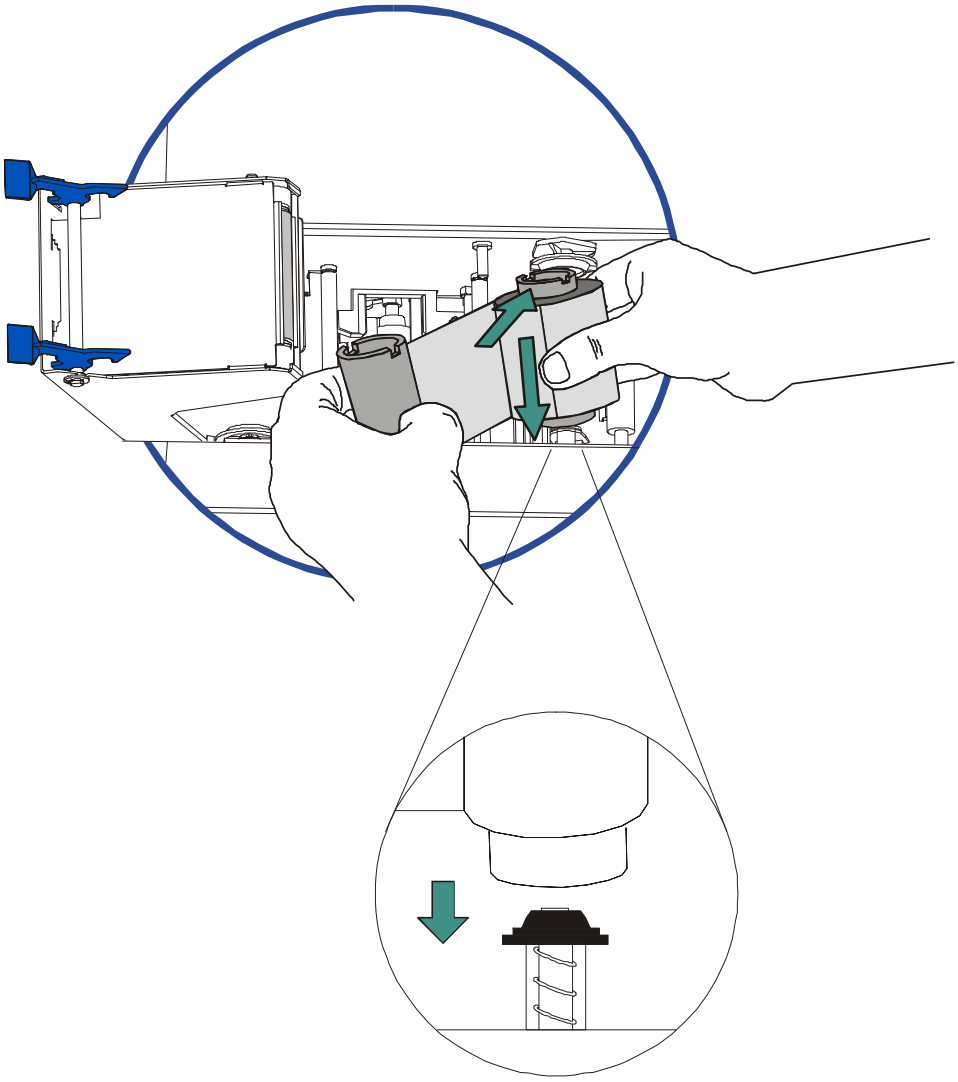
Continued on the next page



Loading the Overlaminate (continued)

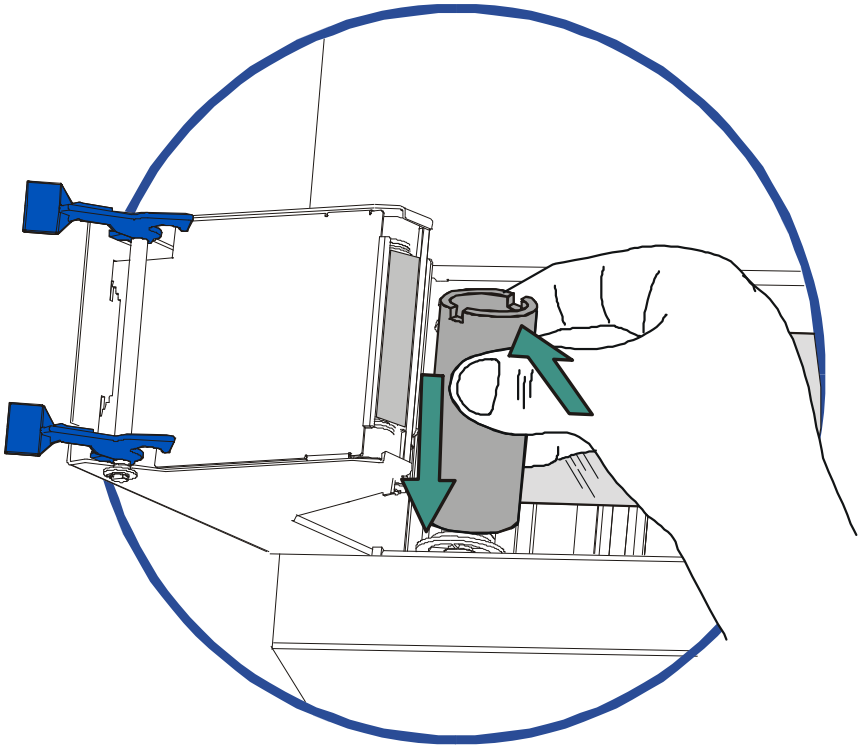
Step	Procedure
4	Place the supply end of the overlaminate roll in between the two black Lamination Drive Hubs. (**Note:** The smaller Lamination Drive Hub closest to the front of the lamination module is spring loaded. Use the end of the supply roll with the black core plug to push this hub in when inserting the overlaminate roll. Make certain the overlaminate material is fed from beneath the roll as shown.)

Continued on the next page



Loading the Overlaminate (continued)

Step	Procedure
5	Close the lamination module. When you start to print, the Lamination Drive Hubs will automatically engage the overlaminate core notches. **Caution:** Do not reverse the overlaminate roll. Damage may occur to the lamination Roller!



Adjusting the Card Lamination Module

The Card Printer supports the attachment of an optional Card Lamination Module. This module can be ordered pre-installed on the Printer from the factory or can be ordered separately as a field upgradeable module. Once attached, the Card Lamination Module allows you to apply Fargo certified overlaminates for more secure, tamper-resistant cards. This section explains all aspects of the Card Lamination Module's operation and the overlaminate materials available.

IMPORTANT! Fargo Card Printers require highly specialized print Ribbons to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, your Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact your authorized reseller.

Adjusting the Card Flattener

The Card Lamination Module provides an adjustable Card Flattener that allows you to fine-tune the flatness of laminated cards. This flattener works by reverse bending cards as they eject from the laminator while they are still warm.

In most cases, card warpage is only a concern when laminating on a single side of card stock which has a PVC-based core rather than a polyester-based core. Cards with a PVC-based core are not as heat resistant and are not recommended for use when laminating

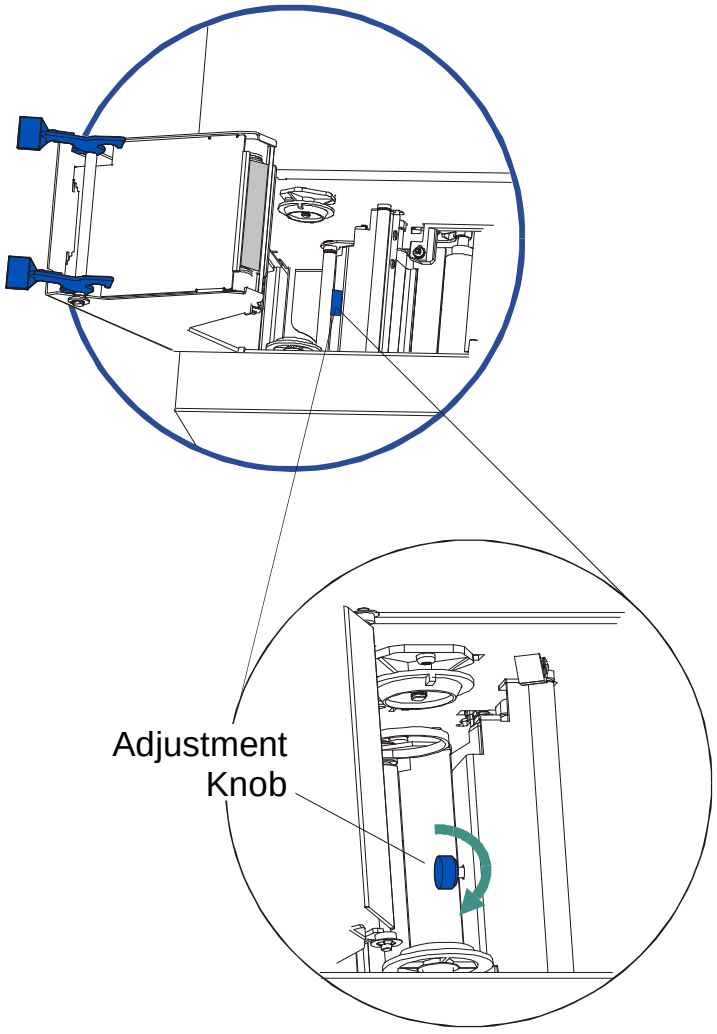
By default, the Card Flattener is configured at the factory to accommodate UltraCard III type card stock. (**Note:** If you are experiencing an unacceptable amount of card warpage, please refer to the following to adjust the Card Flattener.)

Step	Procedure
1	Open the Card Lamination Module.
2	Remove the overlaminate material if installed.

Continued on the next page

Adjusting the Card Flattener (continued)

Step	Procedure
3	If laminated cards are bowing upward, turn the Card Flattener Adjustment Knob clockwise. (**Note:** This pushes the flattener Roller down to increase the reverse bending pressure. For best results, turn the knob one full rotation, then print and laminate a test card. Repeat this process as necessary.)
4	If the card is bowing downward, the reverse bending pressure may be too great. In this case, rotate the adjustment knob counter-clockwise. (**Note:** Some card types have very low heat resistance and may not be acceptable for laminating.)



Adjusting the Card Guide Rail

If applying PolyGuard overlaminate, you may find that the individual patch from the overlaminate roll may be off-center when applied to a card. (**Note:** Although the patch placement will vary slightly from card to card, they should never hang over the edge of the card.) See the Using the Lamination tab (only with Card Lamination Module) procedure in Section 4, page 228.

To center the vertical placement of these patches across the card width, a mechanical adjustment can be made. If the PolyGuard patches are being applied too closely to or overlapping, a card's top or bottom edge (as the card travels through the Printer), the laminator's Card Guide Rail should be adjusted. (**Note:** This adjustment is described below.)

Step	Procedure
1	Open the lamination module's Top Cover and Lamination Station.
2	a. Feed a blank card into the module by inserting it through the output hopper and reverse feeding it by pressing the Lamination module's **Resume** button. b. Manually position the card so its edge is flush with the Card Guide Rail.

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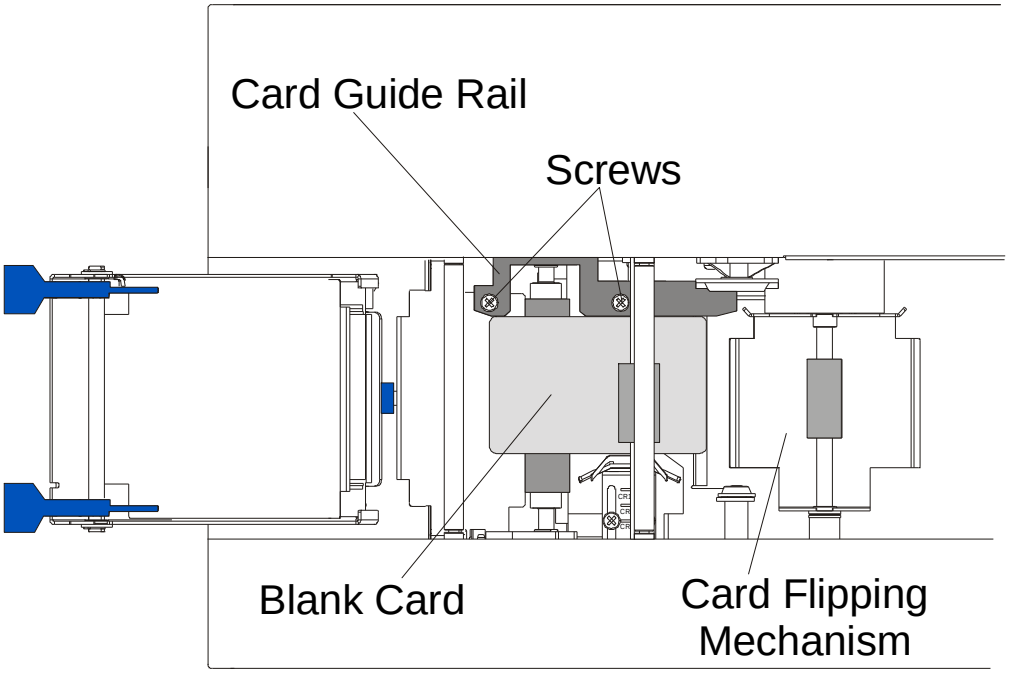
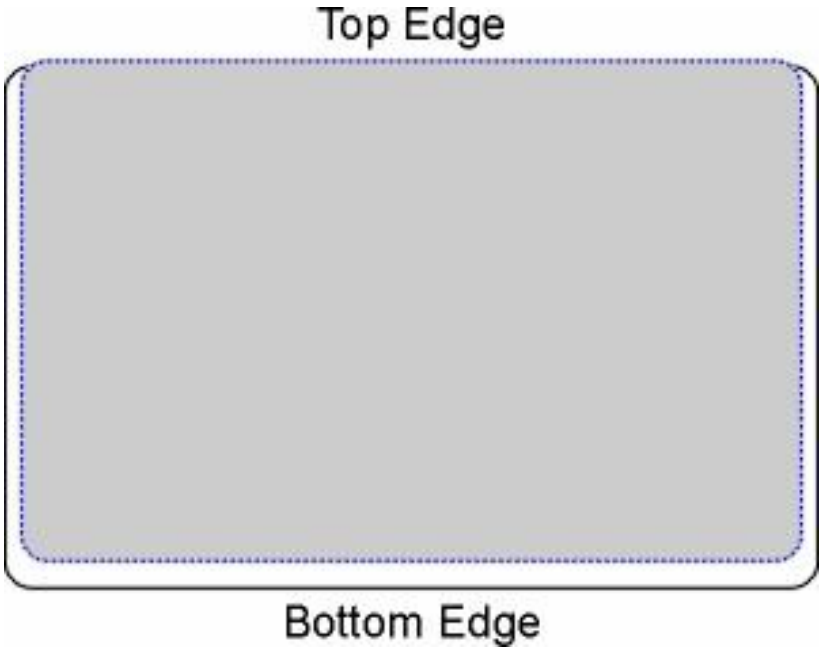


Adjusting the Card Guide Rail (continued)

Step	Procedure
3	Slightly loosen the two (2) screws which fasten the Card Guide Rail to the Printer's main chassis.
4	If the PolyGuard patch is being placed more toward a card's top edge (as shown), move the Card Guide Rail slightly toward the rear of the Printer (opposite the direction you would like the patch to move).

Continued on the next page



Adjusting the Card Guide Rail (continued)

Step	Procedure
5	If the PolyGuard patch is being placed more toward a card's bottom edge (as shown), move the Card Guide Rail slightly toward the front of the Printer (opposite the direction you would like the patch to move).
6	Always make very slight adjustments to the Card Guide Rail and run a test print after each adjustment until the optimum patch position is found. (**Note:** Be sure the Card Guide Rail always remains parallel to the card path and that the screws loosened in step 1 are retightened after each adjustment.)

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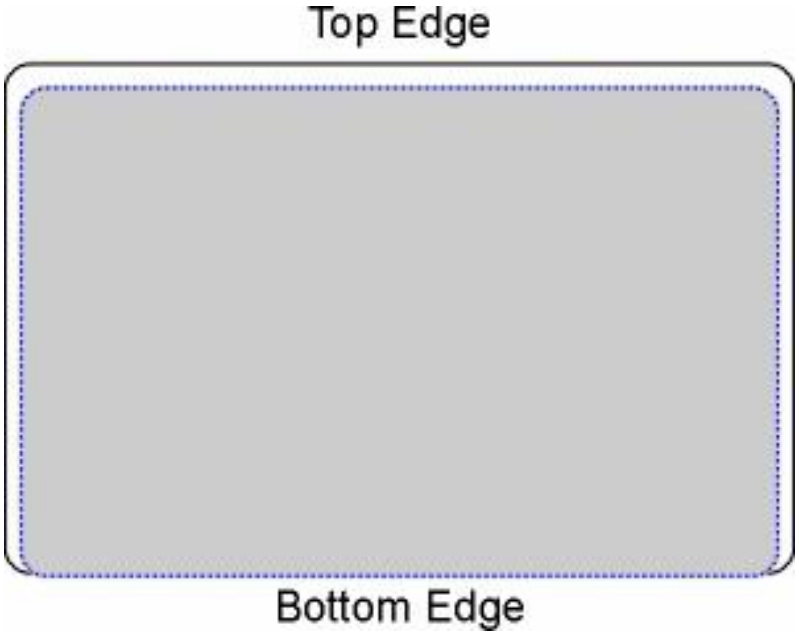
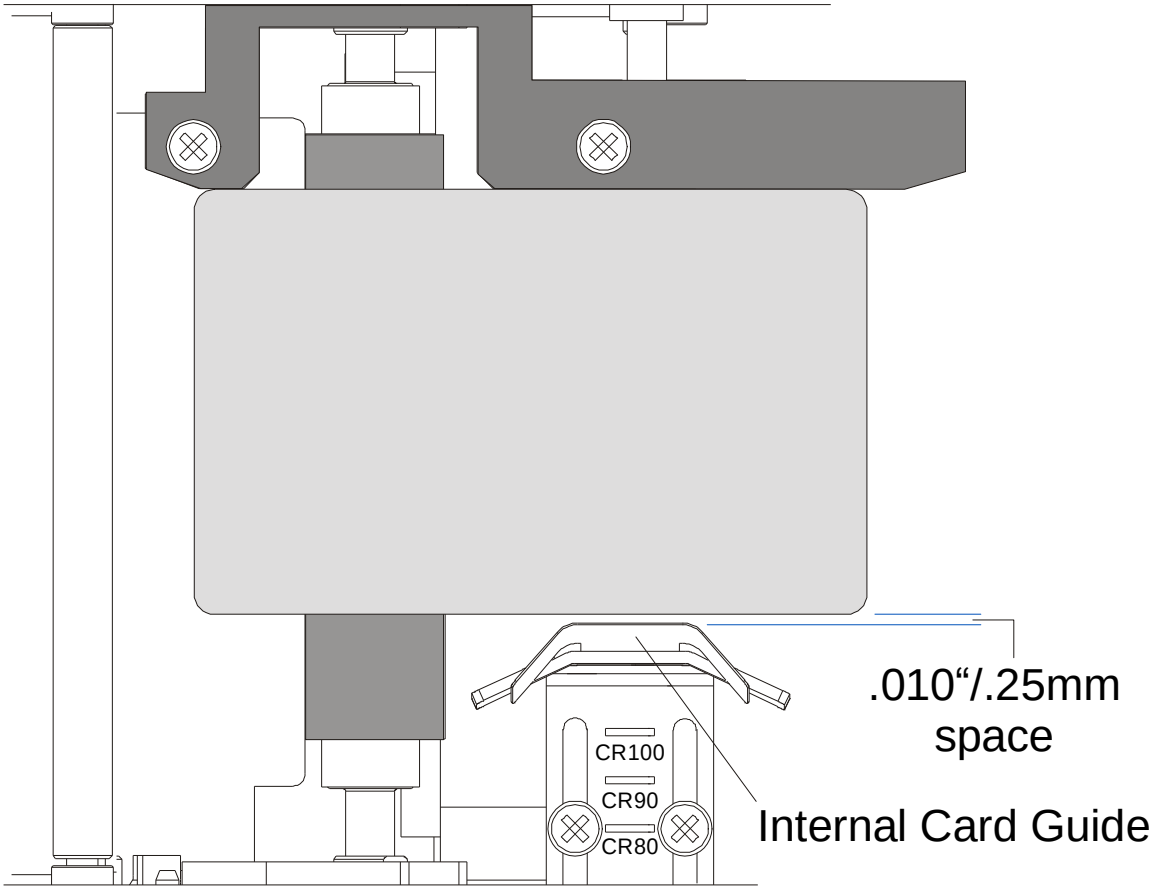


Adjusting the Card Guide Rail (continued)

Step	Procedure
7	Once the adjustment is complete, be sure that the card is not binding between the Card Guide Rail and the Internal Card Guide. (**Note:** Depending upon how much you adjusted the Card Guide Rail, you may also need to adjust the Internal Card Guide.) When both are adjusted properly, there should be a slight space of about .010"/.25mm between the card edge and the Internal Card Guide as indicated here:
8	If necessary, adjust the Internal Card Guide as described in the remainder of this section.

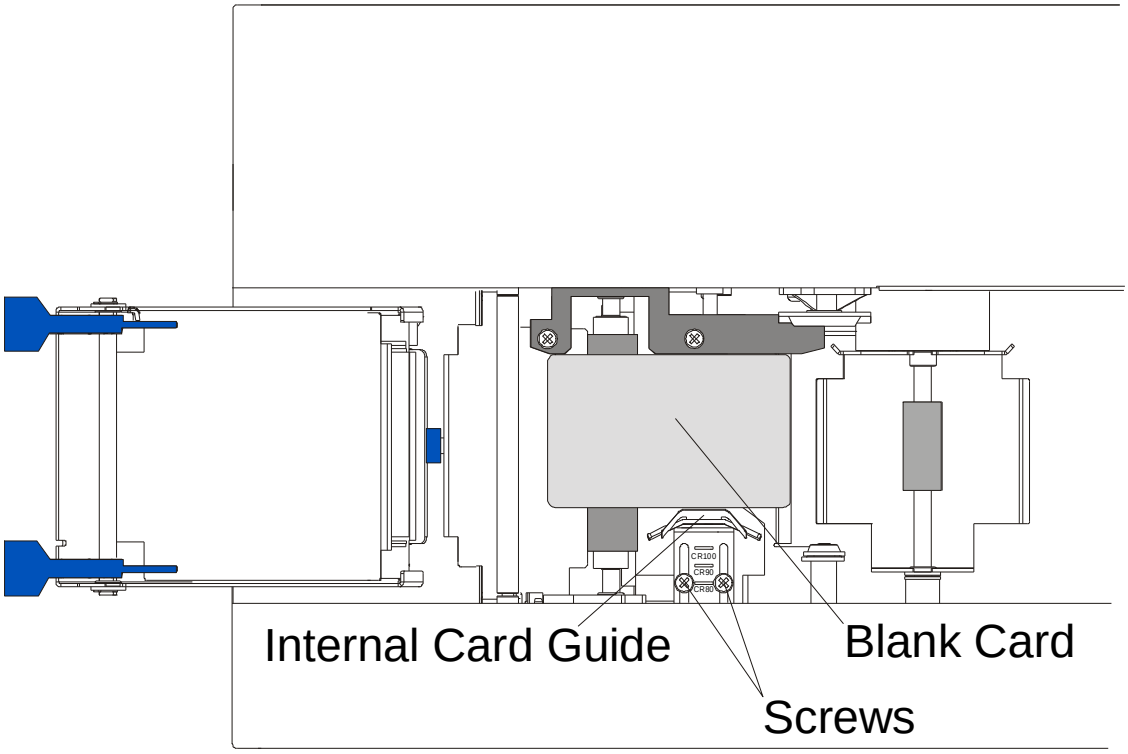


Adjusting the Internal Card Guide

The Internal Card Guide is what holds the card in position as it feeds through the Card Lamination Module.

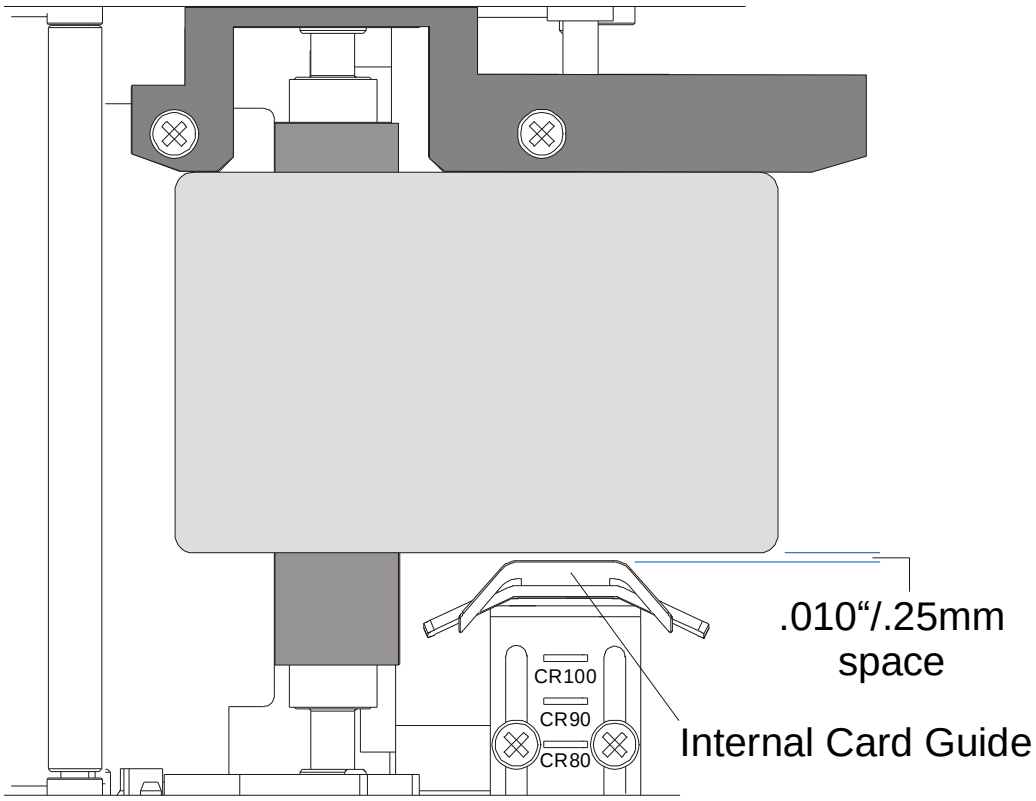
Step	Procedure
1	Feed a blank card into the module by inserting it through the Output Hopper and reverse feeding it by pressing the lamination module's **Resume** button. Manually position the card so its edge is flush with the Card Guide Rail.

Continued on the next page



Adjusting the Internal Card Guide (continued)

Step	Procedure
2	Slightly loosen the two screws which fasten the Internal Card Guide to the Printer's main chassis.
3	Move the Internal Card Guide so there is a slight space of about .010"/.25mm between the card edge and the Internal Card Guide as indicated below. When adjusting the Internal Card Guide, be sure it always remains parallel to the Card Guide Rail and card edge.
4	Always make very slight adjustments to the Internal Card Guide and run a test print after each adjustment until the optimum position is found. (**Note:** Be sure the Internal Card Guide always remains parallel to the card path and that the screws loosened in Step 1 are retightened after each adjustment.)



Attaching the Card Lamination Module

The Card Lamination Module can be attached to select Printer models (DTC525 only) as a field upgradeable option. This can typically be done in 20 minutes or less and with no other tools than a phillips screw driver. Please refer to the following steps to attach this module.

This section applies only if you are installing the field upgradeable Card Lamination Module onto a Printer. Your Printer model must be capable of accepting this module as not all Printer models are compatible with this field upgradeable option. If you have questions about compatibility, please contact your authorized Fargo reseller.

Step	Procedure
1	Remove the Card Lamination Module from its packaging.
2	Disconnect the power cable from the Printer.
3	Remove the Card Output Hopper from the Printer. (**Note:** To do this, pull out on the Securing Tab located on the bottom of the Printer and slide the Card Output Hopper completely out of the Printer.)

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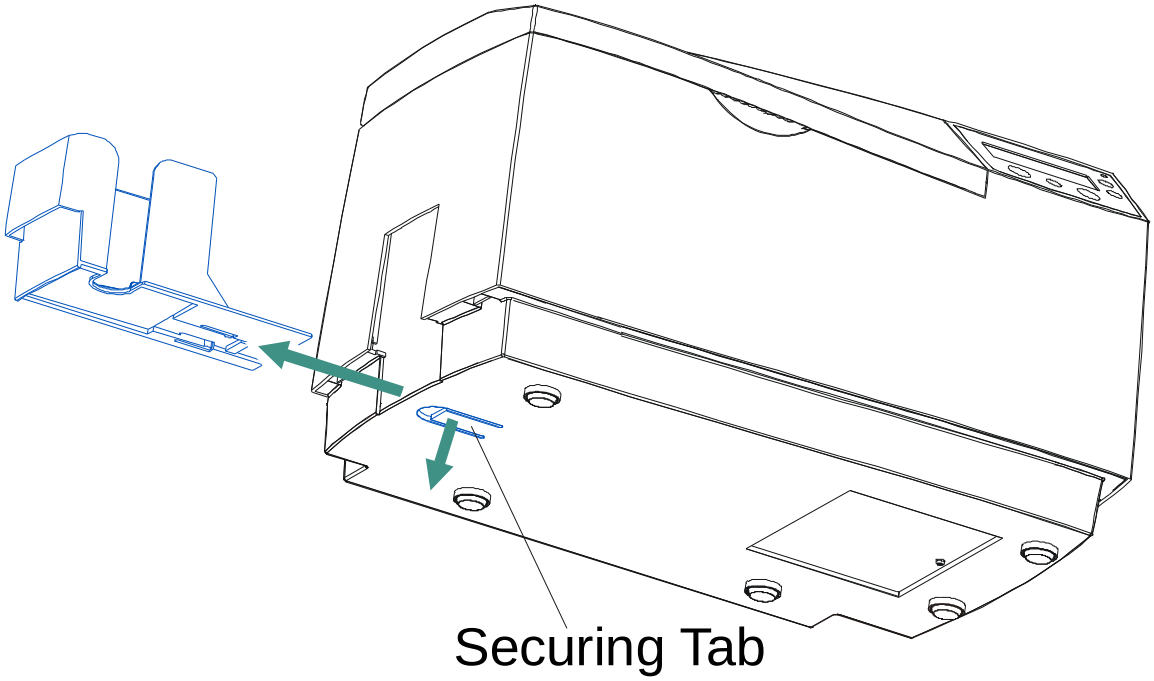
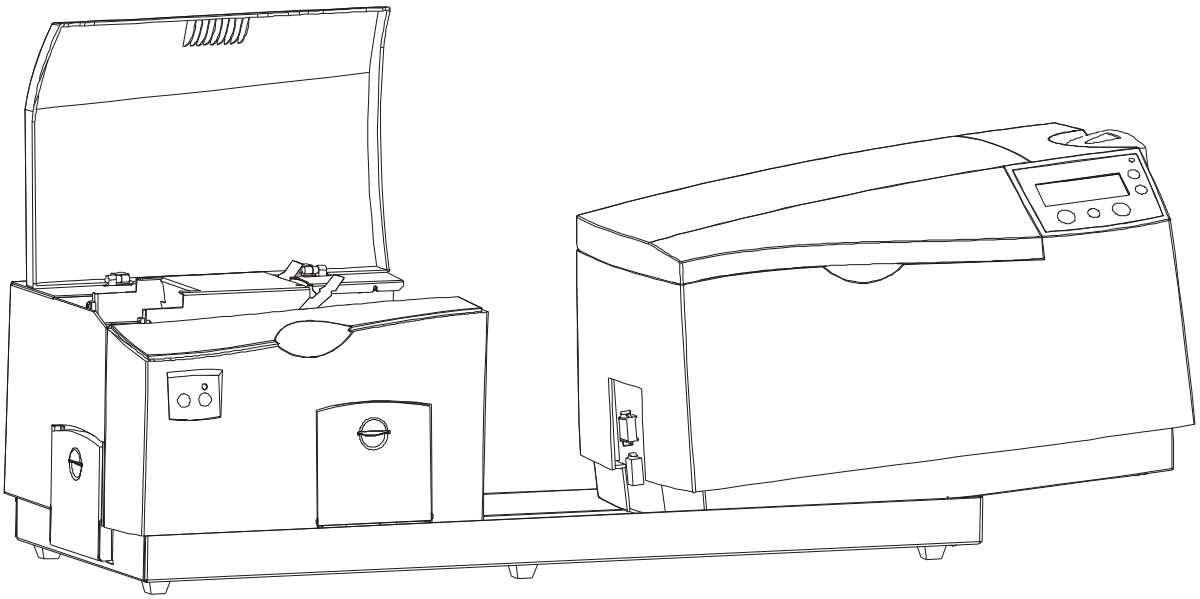


Attaching the Card Lamination Module (continued)

Step	Procedure
4	Set the Printer on the lamination module's Baseplate at an angle as shown. (**Note:** This position will make it easier to connect the Power and Communication cables.)

Continued on the next page



Attaching the Card Lamination Module (continued)

Step	Procedure
5	a. Connect the lamination module's Power Cable to the Printer's Power Port. (**Note:** both are labeled with a **red** Power label.) b. Push firmly to ensure both are securely connected. (**Note:** The port and cable are keyed for one way installation.)

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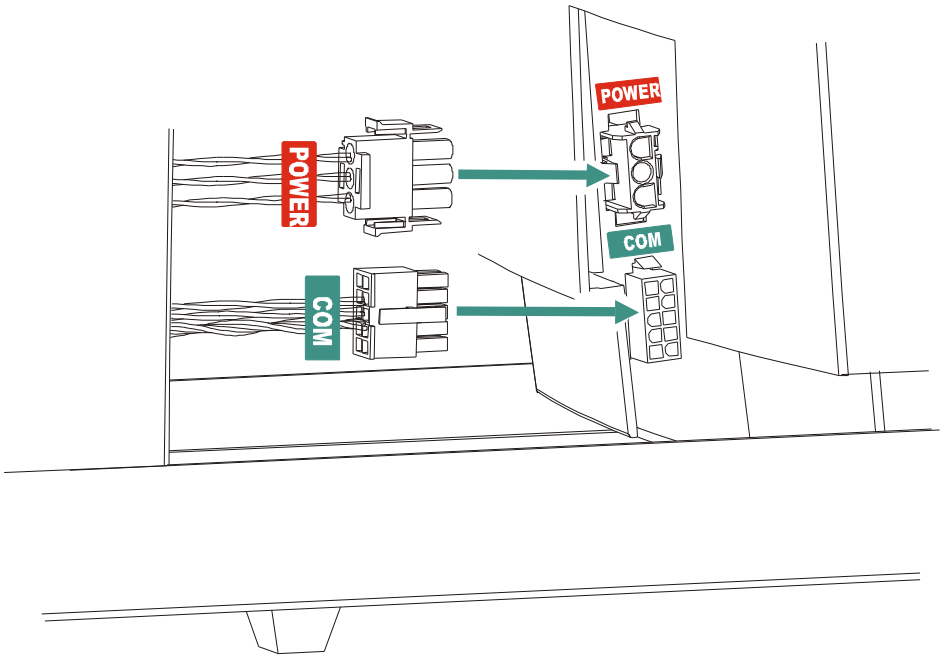
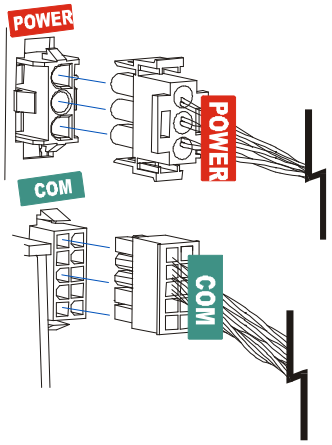
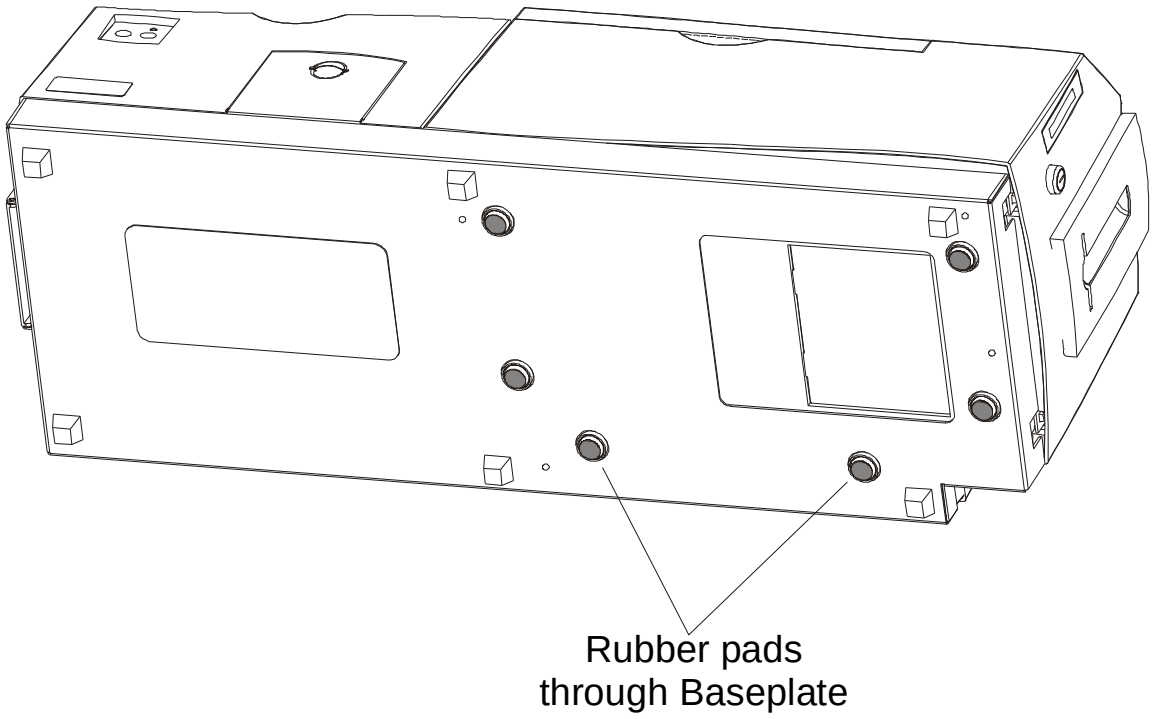




Attaching the Card Lamination Module (continued)

Step	Procedure
6	Set the Printer completely into the lamination module's Baseplate. (**Note:** The rubber pads on the bottom of the Printer will rest securely in the holes in the lamination module's Baseplate when the Printer is seated properly.)

Continued on the next page



Attaching the Card Lamination Module (continued)

Step	Procedure
7	Gently tilt the entire Printer and Lamination Module back onto its rear cover, as shown below. (**Note:** Be careful not to slide the unit around in this position as scratching could occur.)
8	Using a Phillips screw driver, insert each of the four (4) screws into the Baseplate and tighten the screws to secure the Printer to the Lamination Module's Baseplate.

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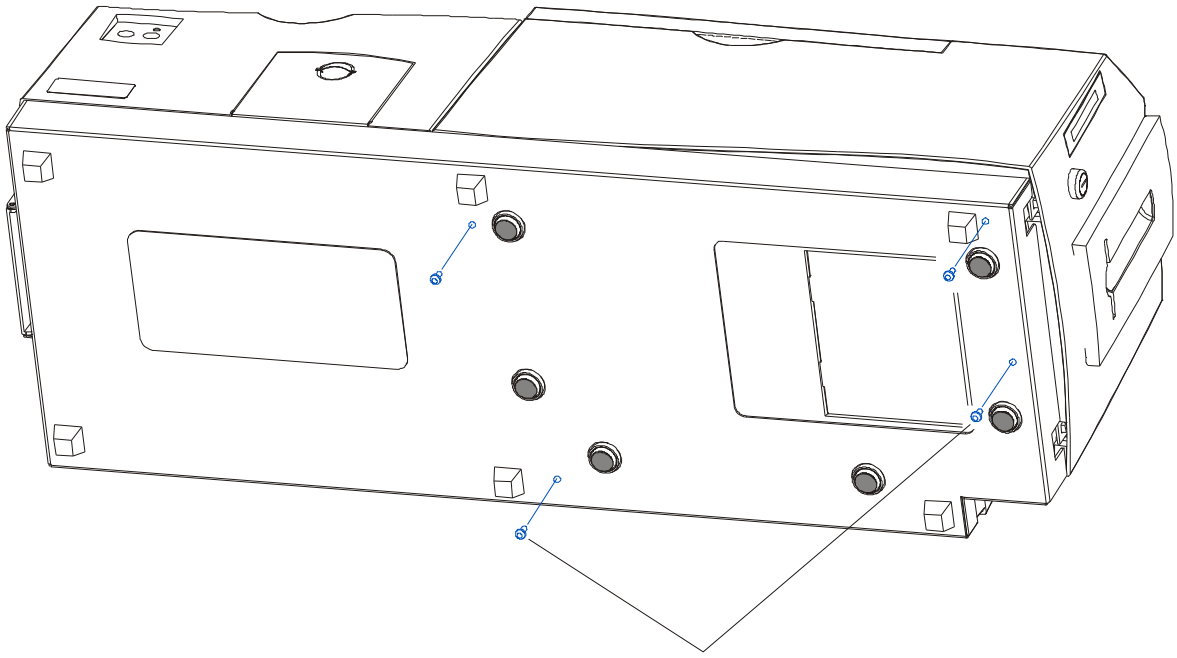


4 screws to secure printer to Baseplate

Attaching the Card Lamination Module (continued)

Step	Procedure
10	While being careful not to scratch the plastic cover, remove the Fargo DTC525 model number label from the front of the Printer and replace it with the included Fargo DTC525-LC model number label. (**Note:** This is important so users know the exact Printer model when ordering supplies, when calling for technical assistance or when downloading Printer Driver/Firmware Updates.)
11	If you have not already done so, install the LC version of your Printer model's Printer Drive. • For lamination-related Printer Driver options, see the Using the Lamination tab (only with Card Lamination Module) in Section 4, page 228. • For overlaminate information, see the Reviewing the Overlaminates in Section 1, page 61 and Loading the Overlaminate in Section 3, page 134. The packaging for the Card Lamination Module has been designed to accommodate shipping either the lamination module-only or the fully assembled Printer with lamination module. After assembling the complete Printer/lamination system, please re-use the lamination module packaging when transporting the unit.
12	Once all print supplies are installed, run a test print to make sure installation was successful. • You must have PolyGuard™ overlaminate and a full-color print Ribbon installed to print this test image. • To test, go to the Printer's LCD display and select MENU, PRINT TEST IMAGE and run the lamination Self Test named: Color/Resin YMCK+L. • The test image will begin printing after a few seconds and will both print and laminate the card.

Section 4: Printer Adjustments

The purpose of this section is to provide the User with specific information on Printer adjustment procedures.

Safety Messages (review carefully)

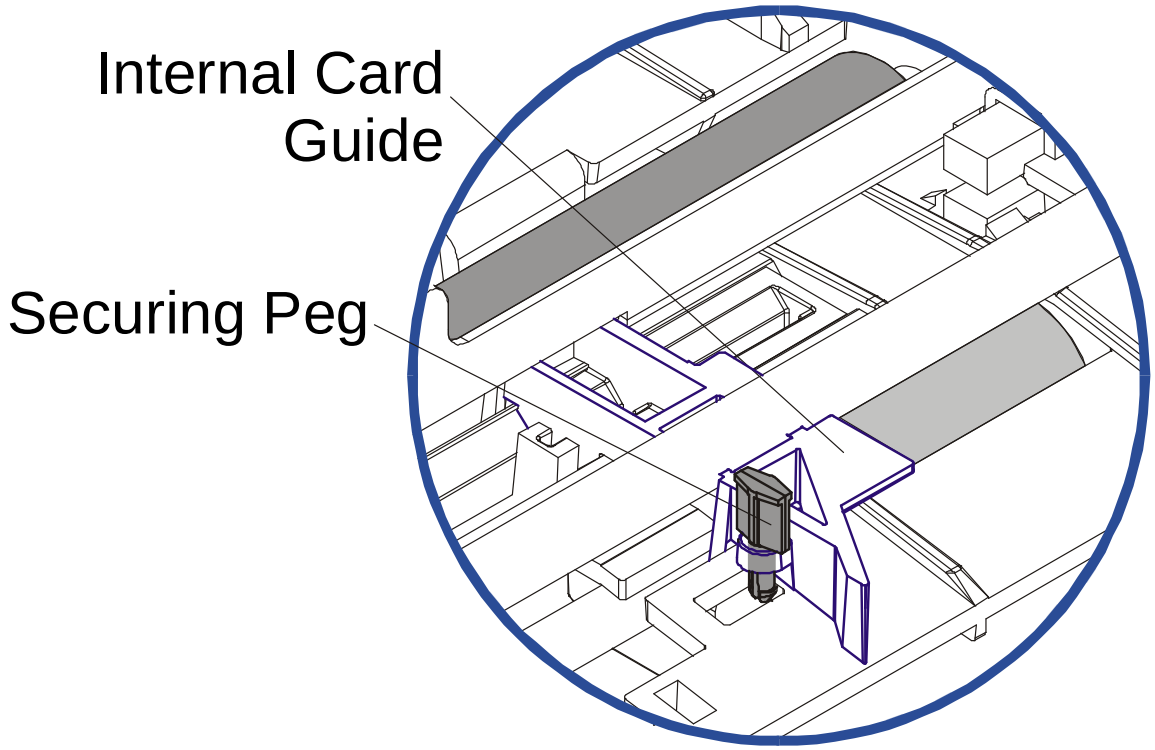
Symbol	Critical Instructions for Safety purposes
Danger:	**Failure to follow these installation guidelines can result in death or serious injury.** Information that raises potential safety issues is indicated by a warning symbol (as shown to the below). • **To prevent personal injury**, refer to the following safety messages before performing an operation preceded by this symbol. • **To prevent personal injury**, always remove the power cord prior to performing repair procedures, unless otherwise specified. • **To prevent personal injury**, make sure only qualified personnel perform these procedures.
Caution:	**This device is electrostatically sensitive**. **It can be damaged if exposed to static electricity discharges.** Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below). • **To prevent equipment or media damage**, refer to the following safety messages before performing an operation preceded by this symbol. • **To prevent equipment or media damage**, observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the Circuit Board and Printhead Assemblies. • **To prevent equipment or media damage**, always wear an appropriate personal grounding device (e.g., a high quality wrist strap grounded to avoid potential damage). • **To prevent equipment or media damage**, always remove the Ribbon and Cards from the Printer before making any repairs, unless otherwise specified. • **To prevent equipment or media damage**, take jewelry off of fingers and hands, as well as thoroughly clean hands to remove oil and debris before working on the Printer.

Safety Messages (review carefully) (continued)

IMPORTANT! Fargo Card Printers require highly specialized print Ribbons to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, your Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact your authorized reseller.

Adjusting the Internal Card Guide

The Internal Card Guide holds the card in position as it feeds through the Printer. This guide is factory-set to handle both CR-79 sized cards and standard CR-80 sized cards (with thicknesses ranging from 20 to 50 mil).



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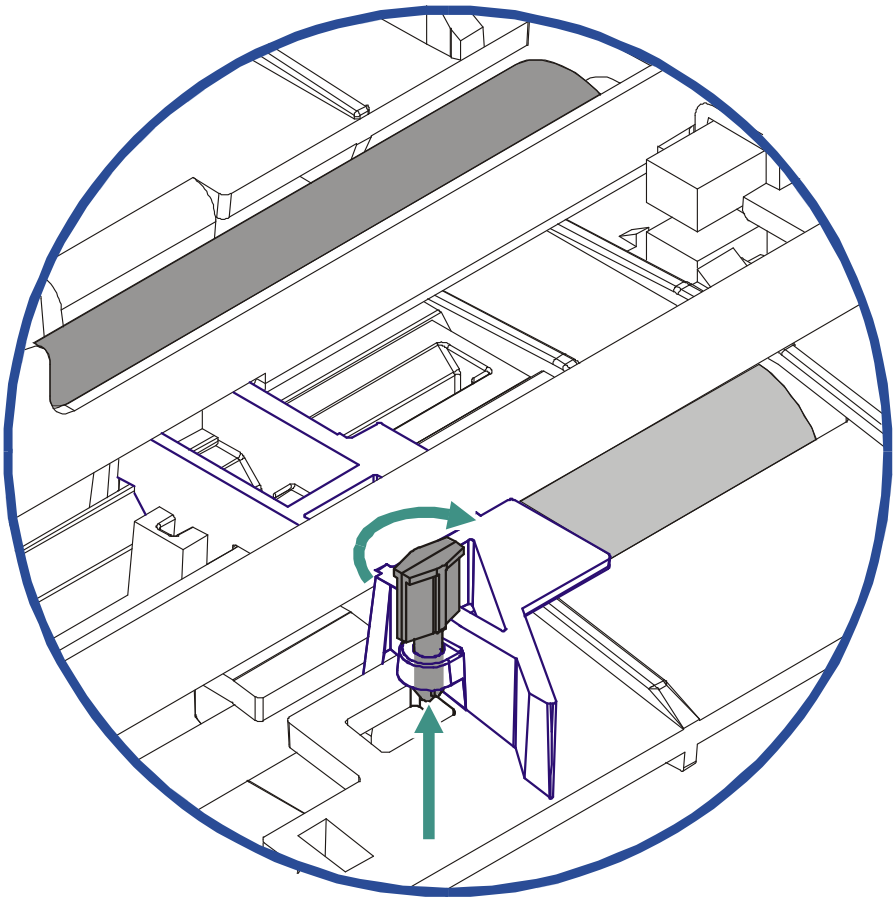
Adjusting the Internal Card Guide (continued)

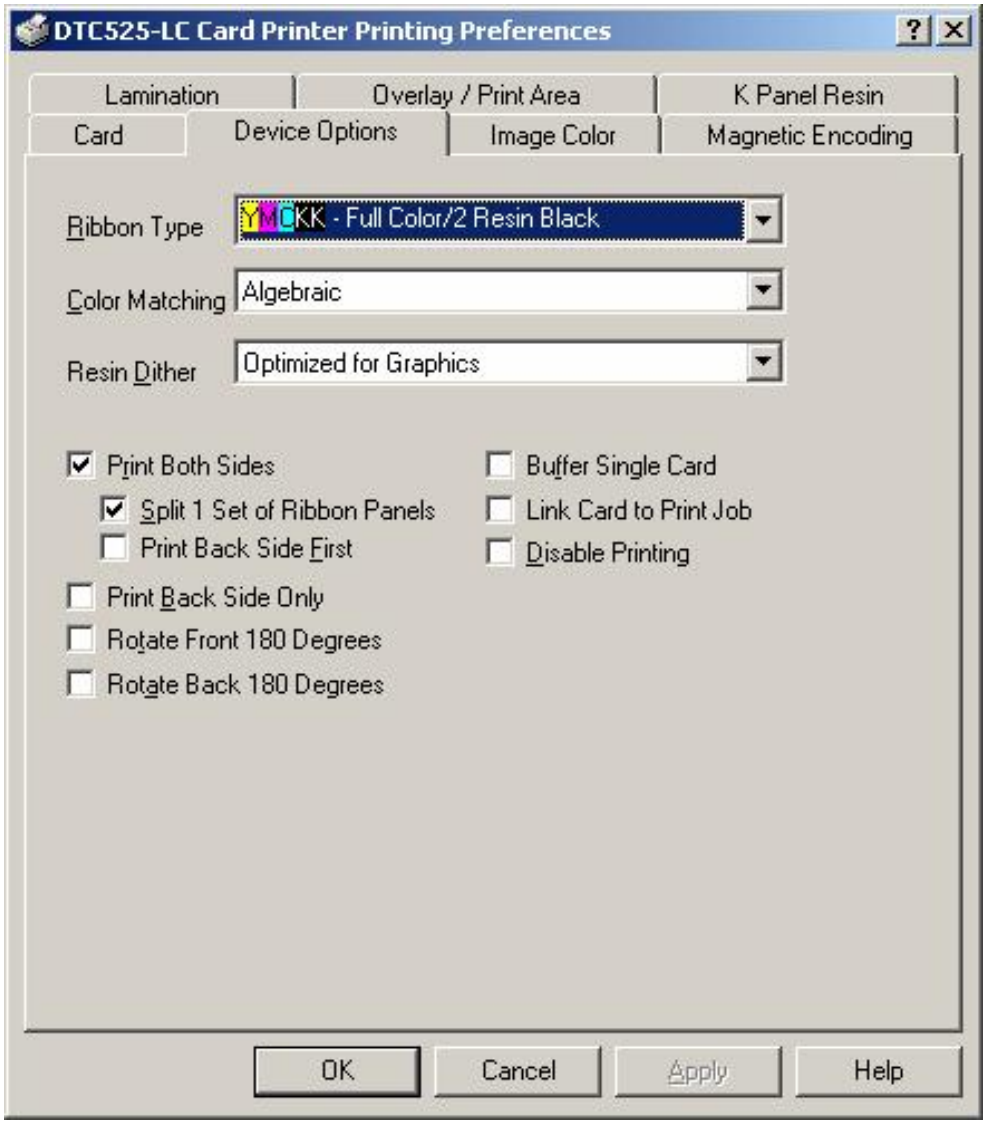
Step	Procedure
1	If loading CR-80, 10 mil cards, adjust this guide (as needed) to accommodate very thin, flexible card stock.
2	Open the Printer's Top Cover and Print Station.
3	Rotate the guide's Securing Peg until it is parallel to the card guide and push it down. (**Note:** This widens the card path so it holds thinner cards with less force.)



Printer Driver options

These Driver options and pictures are from the DTC500 Series driver (Version 1.3.3).

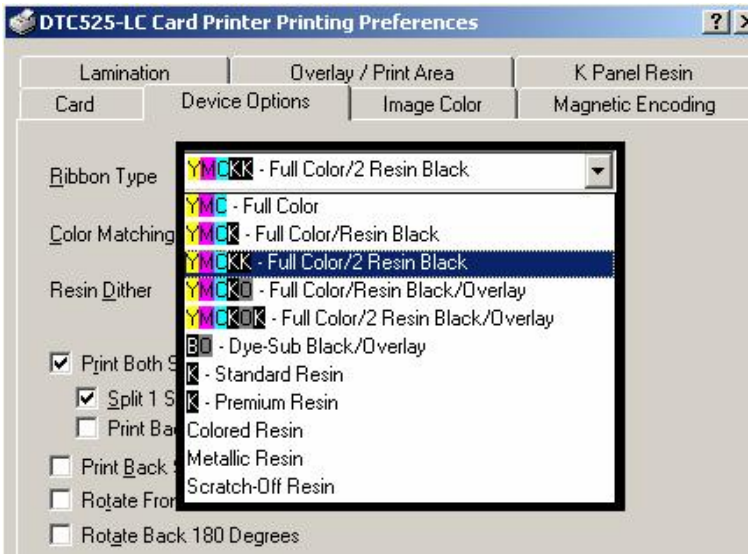
Using the Device options tab



Adjusting for the Ribbon Type

Use the Ribbon Type dropdown menu to match the Ribbon type.

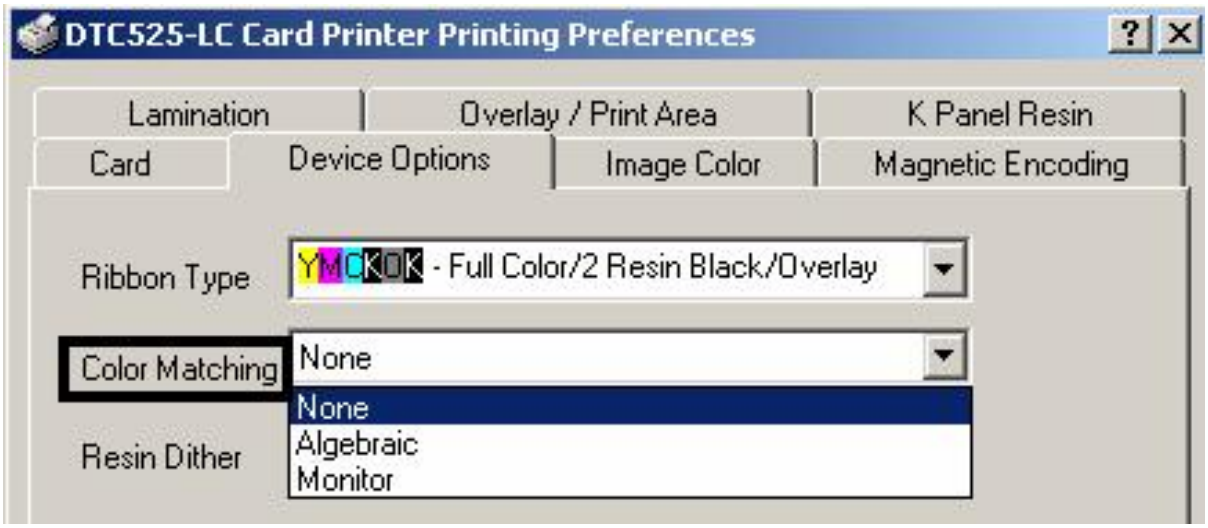
Step	Procedure
1	Adjust to match the Ribbon Type selection with the Ribbon Type already loaded in the Printer. See the Printer Components: Print Ribbons description in Section 1, page 44. • **YMCKO:** Yellow, Magenta, Cyan, Resin Black, Overlay **OR,** • **YMCKOK:** Yellow, Magenta, Cyan, Resin Black, Overlay, Resin Black **OR,** • **BO:** Dye Sub Black, Overlay **OR** • **K:** Standard or Premium Resin **OR** • **Colored Resin:** Colored Resin is available in Red, Blue, Green or White **OR** • **Metallic Resin:** Metallic Resin is available in Gold or Silver **OR** • **Scratch-Off Resin**



Adjusting for the Color matching

Use the Color Matching option to meet the requirements for the print job.

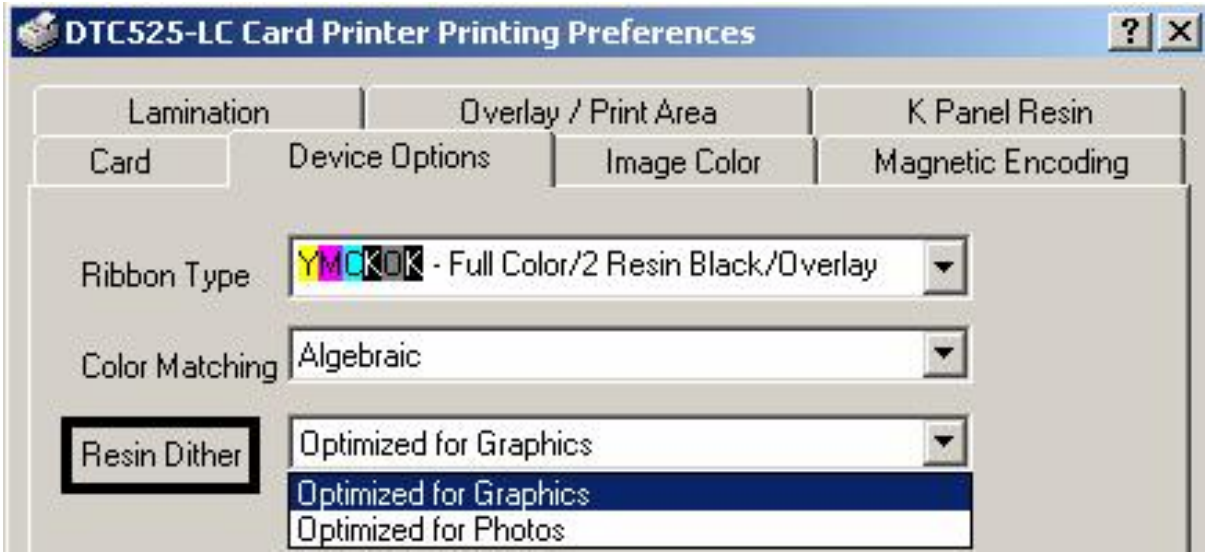
Step	Procedure
1	Select **None** (a) if interested in print speed rather than print color, (b) if color correcting the image for printing has already been done or (c) if using third party Color Matching software. **OR** Select **Algebraic** to allow the Printer driver to make very simple, fast, color balance adjustments. (**Note:** This option gives a natural-looking image without slowing down the processing speed of the Printer driver. It also allows further customization of the printed color of the cards through the Image Color tab.) **OR** Select **Monitor** to allow the Printer driver to make color corrections similar to the Algebraic option but through an RGB color matching algorithm. (**Note:** This option shifts colors more radically so the colors in the image will more closely match how they appear on screen.)



Adjusting for the Resin Dither

Use the appropriate Dither method according to the type of image to be printed. (**Note:** This option only affects those objects printed with the resin black panel.)

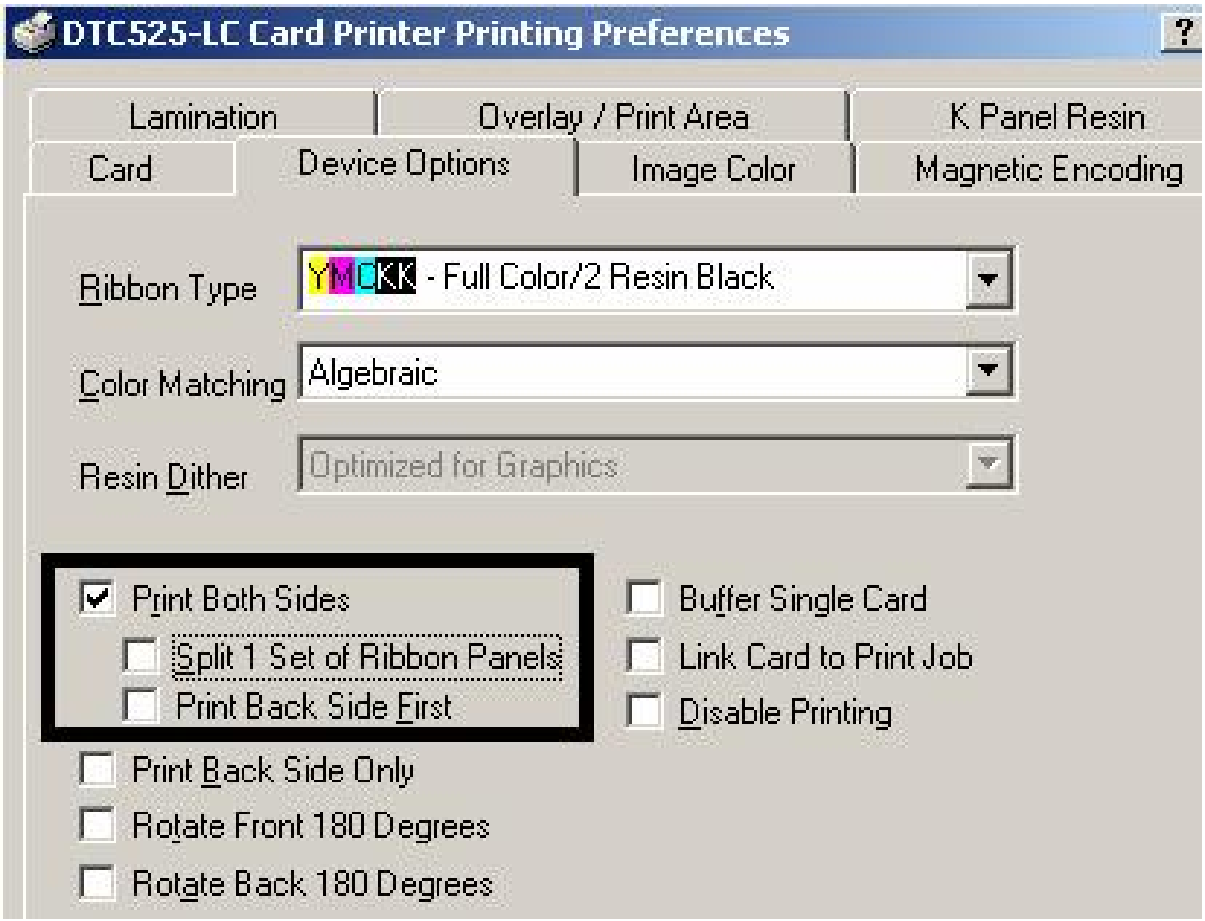
Step	Procedure
1	Select **Optimized for Graphics** when printing lower quality images (e.g., clipart, logos, etc.) with resin. **OR** Select **Optimized for Photo** when printing photo quality images with resin.



Using the Print Both Sides option (DTC520/DTC525 only)

Use this option to automatically print on both the front and backside of a card.

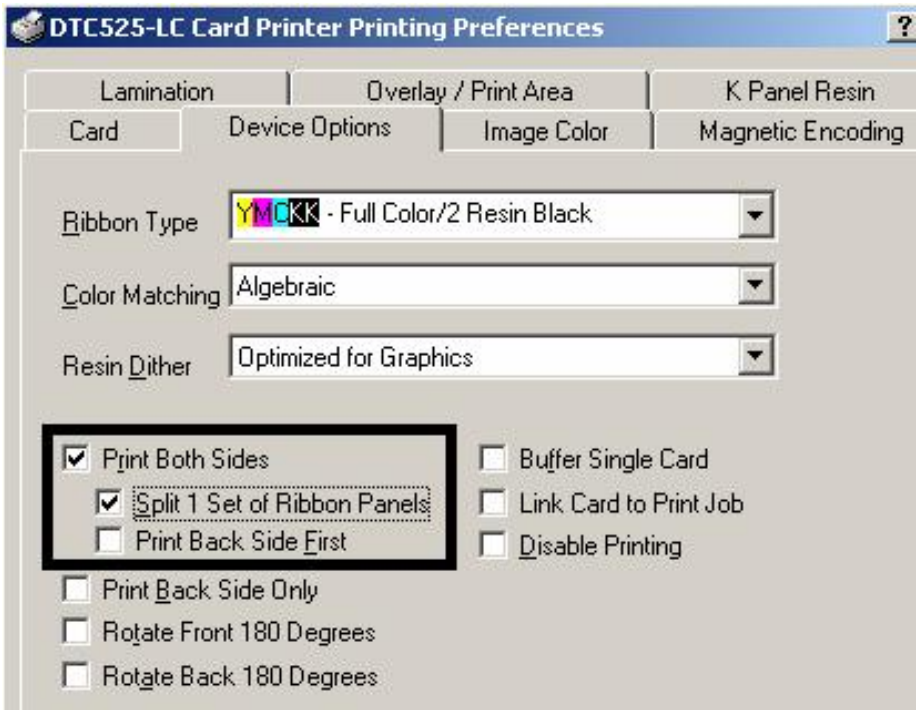
Step	Procedure
1	Select this option in conjunction with any application program that supports a multiple-page document, duplex printing. (**Note:** The program must be able to send down two or more separate pages to be printed within the same document.)



Using the Split 1 Set of Ribbon Panels option (DTC520/DTC525 only)

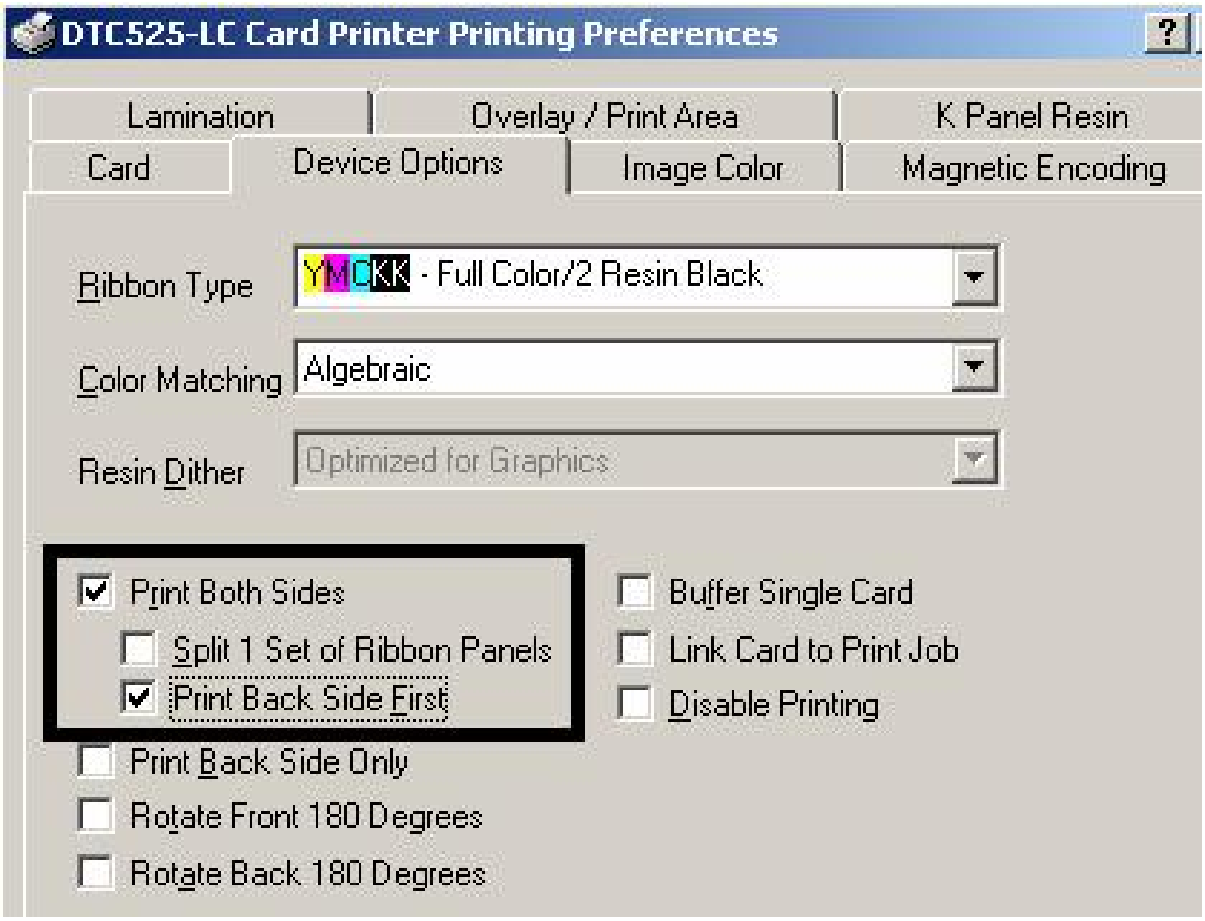
Use this option to provide the most economical means of printing a dual-sided card since a single set of Ribbon panels is essentially split to print both the front and backsides of a card.

Step	Procedure
1	Select this option to automatically print full-color (on the front of a card) and resin black (on the back of a card), using either of the Full-Color YMCKO or YMCKOK print Ribbons. • **YMCKO Ribbon type usage:** The front of the card is printed with the Ribbon's YMC and O panels and the back is printed with the K panel. • **YMCKOK Ribbon type usage:** The front of the card is printed with the YMCKO panels and the back is printed with the second K panel. (**Note #1:** This option is automatically enabled when the YMCKOK Ribbon type is selected.) (**Note #2:** The **Print Both Sides** option is automatically enabled when this option is selected.)



Using the Print Back Side First option

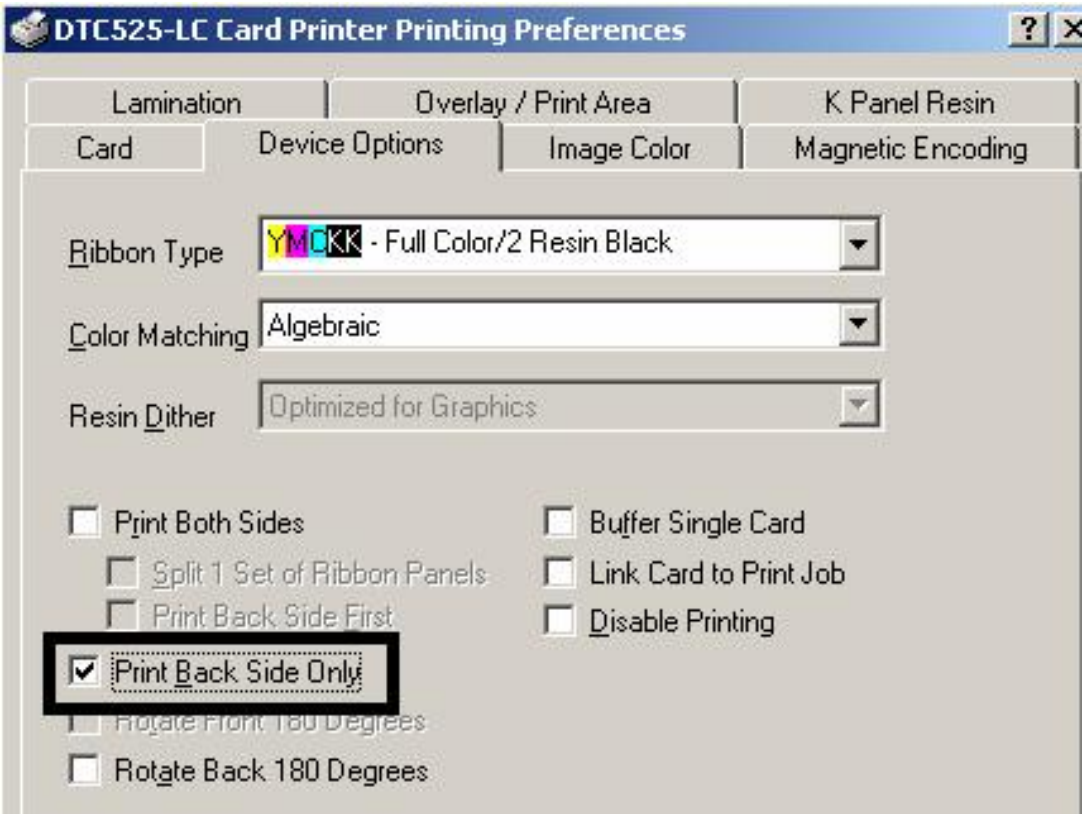
Step	Procedure
1	Select this option if you need to print the first page of a two-page document on the backside of the card. The second page of the document will be printed on the front side of the card.



Using the Print on Back Side Only option (DTC520/DTC525 only)

Use this option to print only onto the backside of cards.

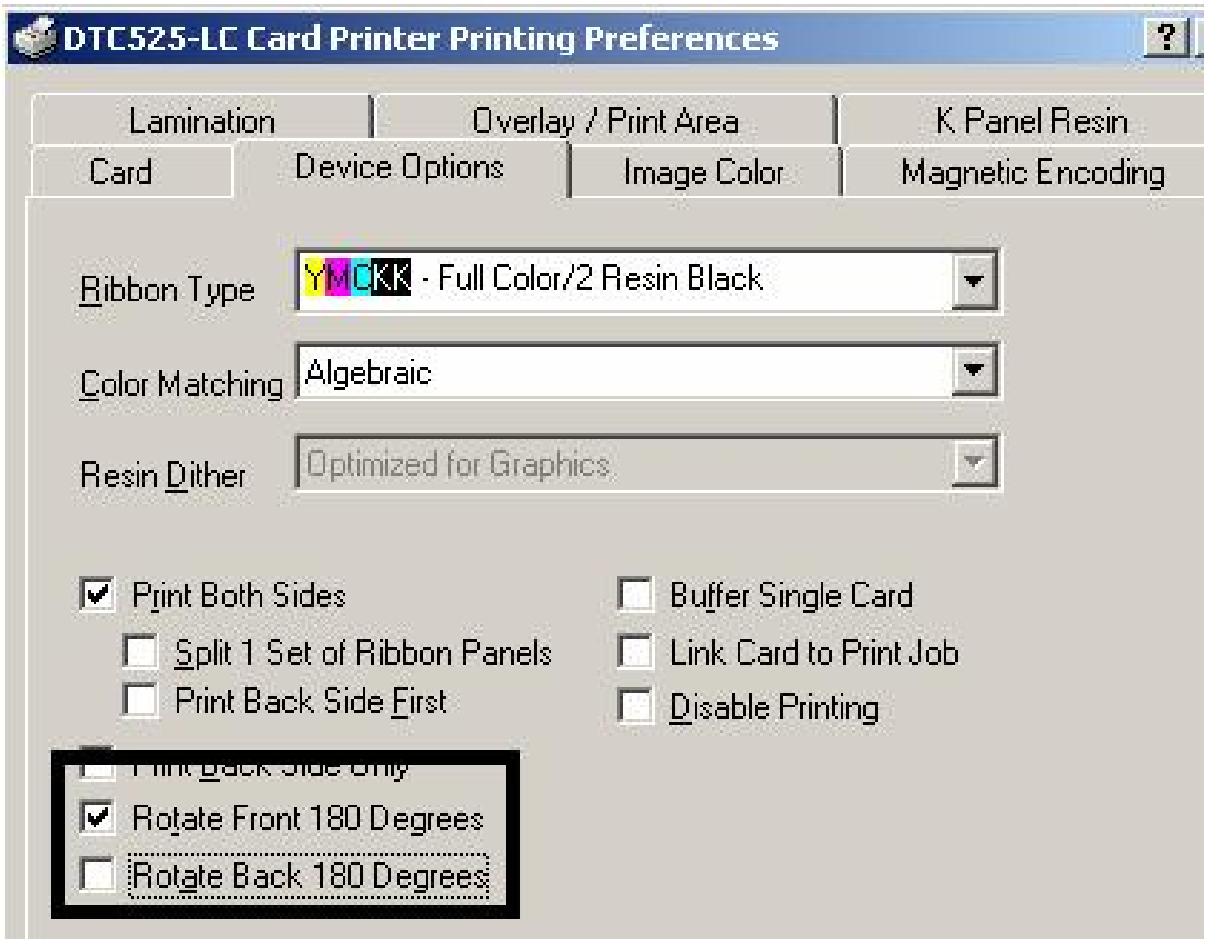
Step	Procedure
1	Select this option to print only onto the backside of cards that must have their Magnetic Stripe or Smart Card chip encoded. (**Note:** Load the cards in the usual fashion.) • When this option is selected, the **Print Both Sides** option is automatically disabled.) • When attempting to print a two-page document (if **Print Back Side Only** is selected), the first page of the document will print on the backside of the card. The second page of the document will then be printed on the back of a second card.



Using the Rotate Front by 180 Degrees option

Use this option to change the position of the printed image in relation to the set location of a card's Magnetic Stripe or smart chip.

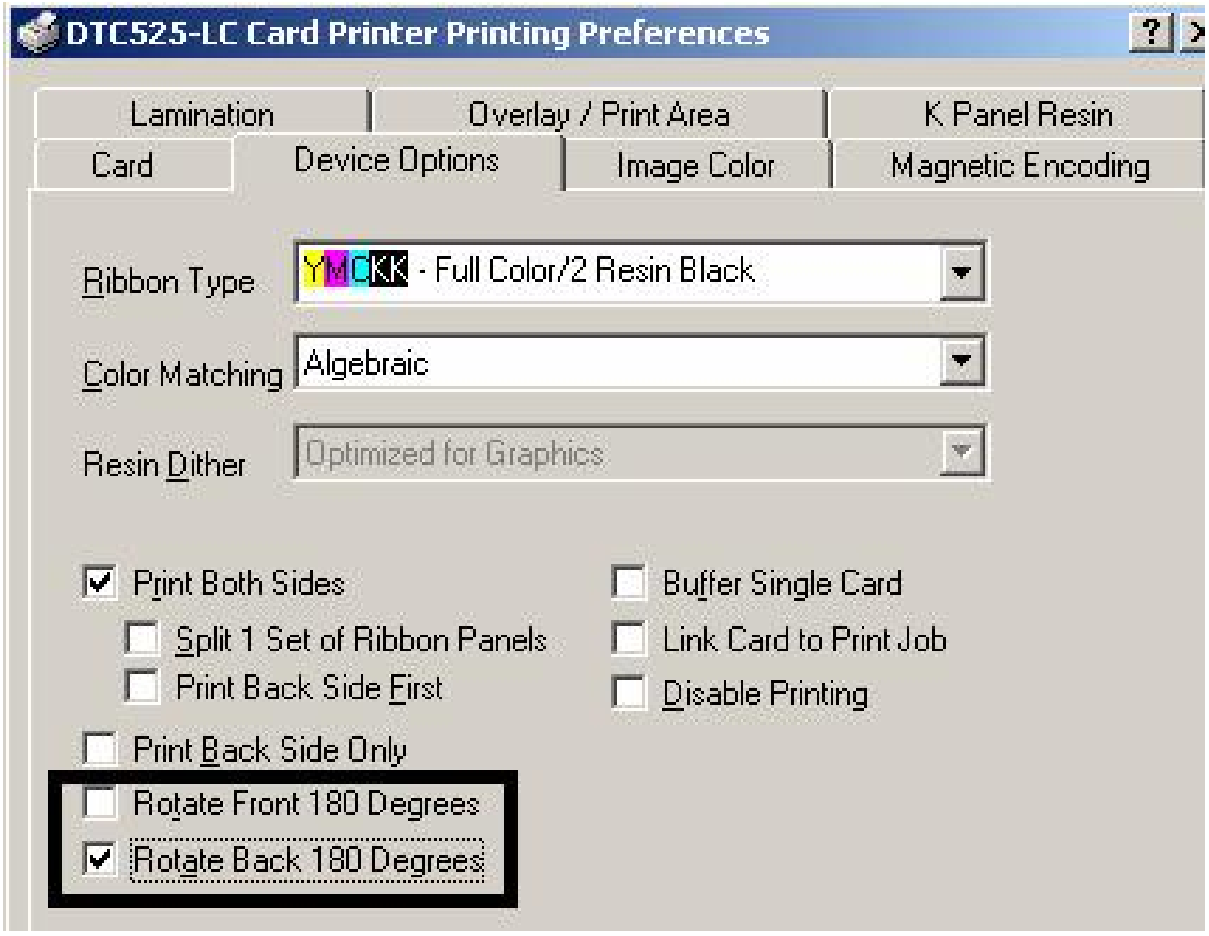
Step	Procedure
1	Select the **Rotate Front 180 Degrees** option to rotate the image on the front of the card by 180 degrees when printed.



Using the Rotate Back by 180 Degrees option (DTC520/DTC525 only)

Use this option to change the position of the printed image in relation to the set location of a card's Magnetic Stripe or smart chip.

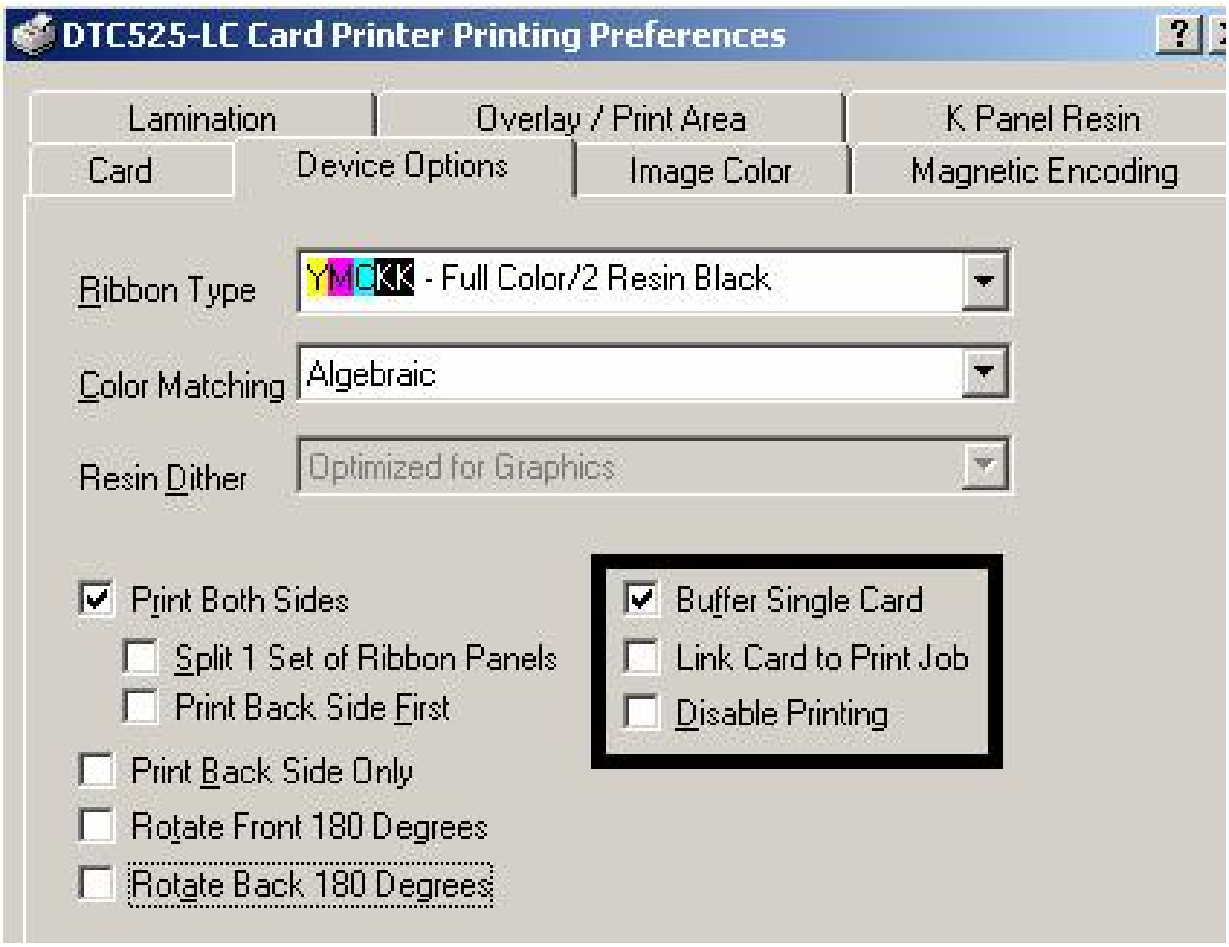
Step	Procedure
1	Select the **Rotate Back 180 Degrees** option to rotate the image on the back of the card by 180 degrees when printed.



Using the Buffer Single Card option

Use this option to force the Printer's memory to Buffer or to hold only one print job at a time.

Step	Procedure
1	Select this option only when printing to multiple Printers sharing print jobs over a network, which ensures that all Printers evenly share all print jobs. **OR** Do not select this option and the Printer's memory will Buffer as many print jobs as possible until the Printer's memory is full. (**Note:** This is ideal for most applications where Printers are not networked together.)

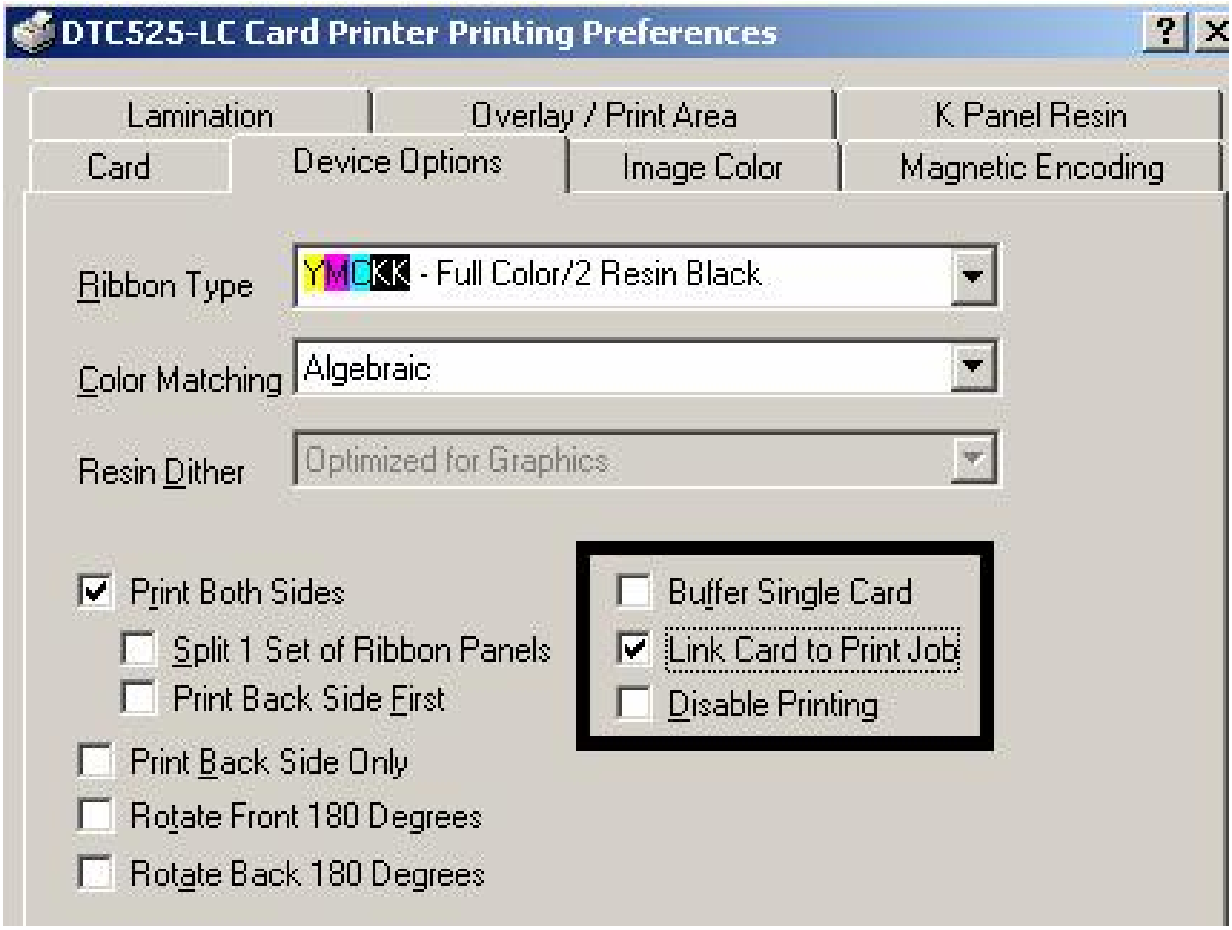


Using the Link Card to Print Job option

Use this option to link a specific card to a specific print job. This option is used when printing and encoding e-cards.

Caution: In this case, it is often critical that an e-card with a pre-encoded serial number, for example, coincide with a particular printed image. If the two were to get out of sync, the card's security could be compromised.

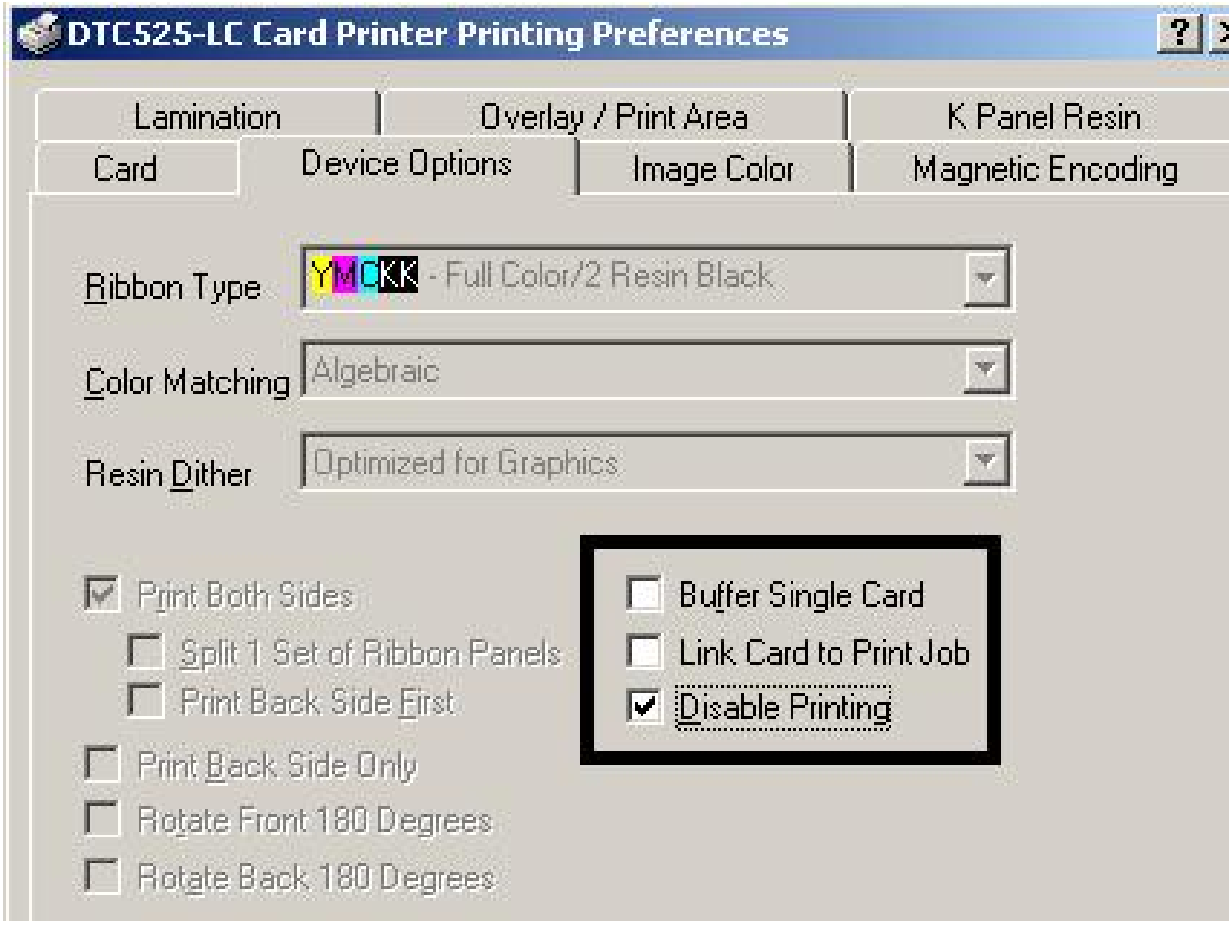
Step	Procedure
1	Select this option to cause the Printer to dispense with the print job if a blank card is removed or ejected. (**Note:** The next card is then fed into the Printer and the next coinciding print job then printed.)



Using the Disable Printing option

Use this option to disable the printing capabilities of the Printer, yet still allow the Printer to encode cards. (**Note:** This option is useful to encode or re-encode cards without additional time, effort or printing supplies.)

Step	Procedure
1	Select this option to ensure no print data will be sent to the Printer (while all encoding instructions will be sent according to how they are configured within the software).

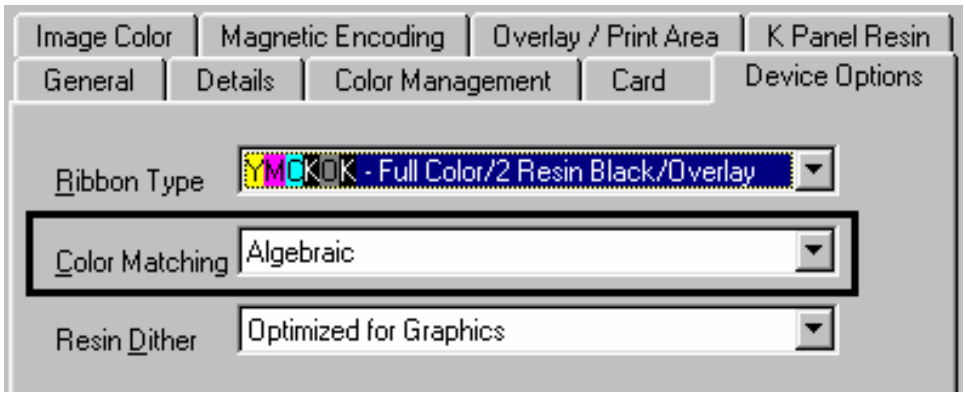


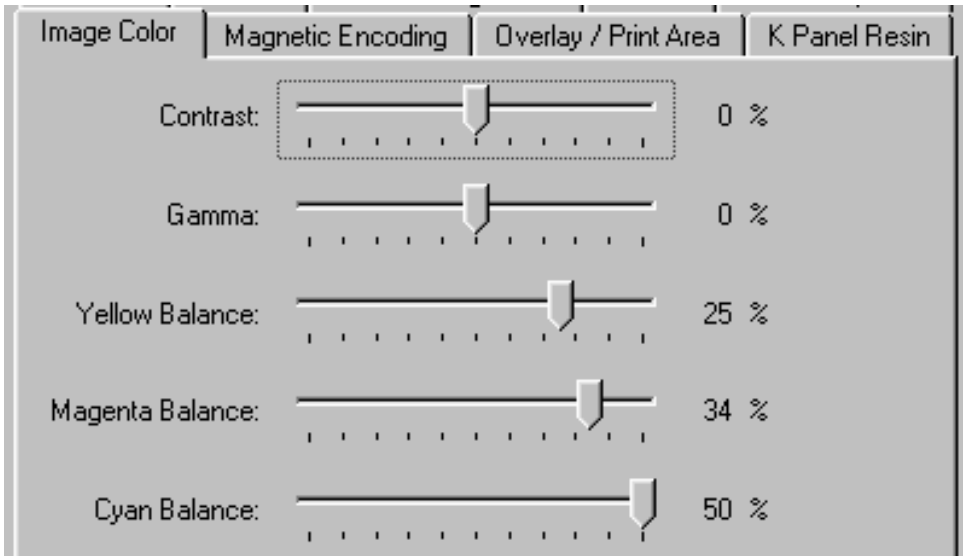
Using the Image Color tab

Use this tab to adjust the color properties.

Step	Procedure
1	Select the **Algebraic Color Matching** option (see the Device options tab window, shown below) to control the **Contrast** and **Gamma** of the printed image, as well as the individual color balance of **Yellow**, **Magenta** and **Cyan** (see the Image Color tab window, shown below). In most cases, the default settings of these options will suffice.

Continued on the next page

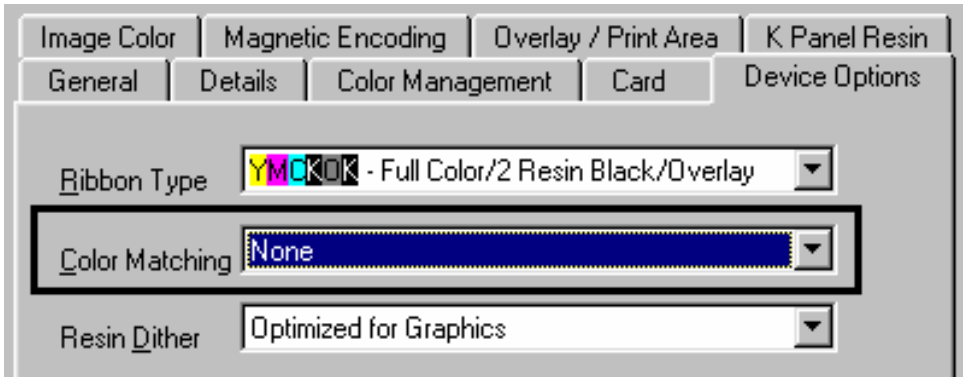


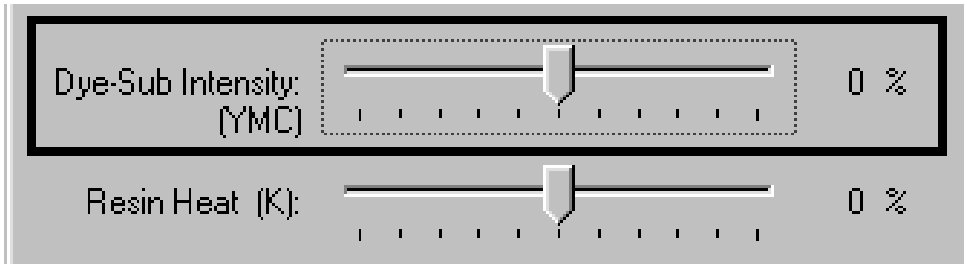


Using the Image Color tab (continued)

Step	Procedure
2	Select the **None** or **Monitor** option (see the Device options tab, shown below) to only display the Dye-Sub Intensity and Resin Heat sliders.
3	Control the overall darkness and lightness of the dye-sub printed image by adjusting the **Dye-Sub Intensity** slide by clicking and dragging the slide's box. • Move the slide to the left to cause less heat to be used in the printing process, thus generating a lighter print. **OR** • Move the slide to the right to cause more heat to be used, thus generating a darker print. (**Note:** This slide only affects those images printed with Dye-Sublimation Ribbon panels (YMC).)

Continued on the next page





Using the Image Color tab (continued)

Step	Procedure
4	Control the amount of heat the Printer uses (a) when printing with the resin black panel of a full-color Ribbon or (b) when printing with a resin-only Ribbon by adjusting the **Resin Heat** slide. See the Printer Components: Print Ribbons description in Section 1, page 44. • Move the slide to the left to cause less heat to be used in the printing process, causing resin images to be lighter or less saturated. **OR** • Move the slide to the right to cause more heat to be used, causing resin images to be darker or more saturated. (**Note:** This control can be helpful for fine-tuning the sharpness of resin text and bar codes. See the Resolving the excessive Resin Printing problems procedure in Section 2, page 124.)

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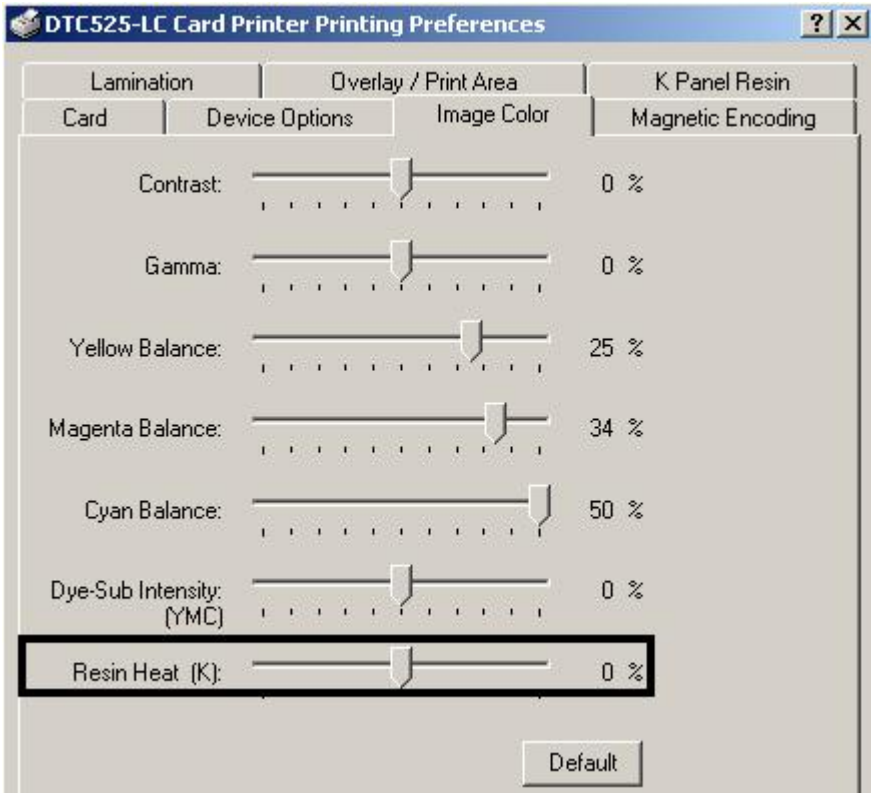
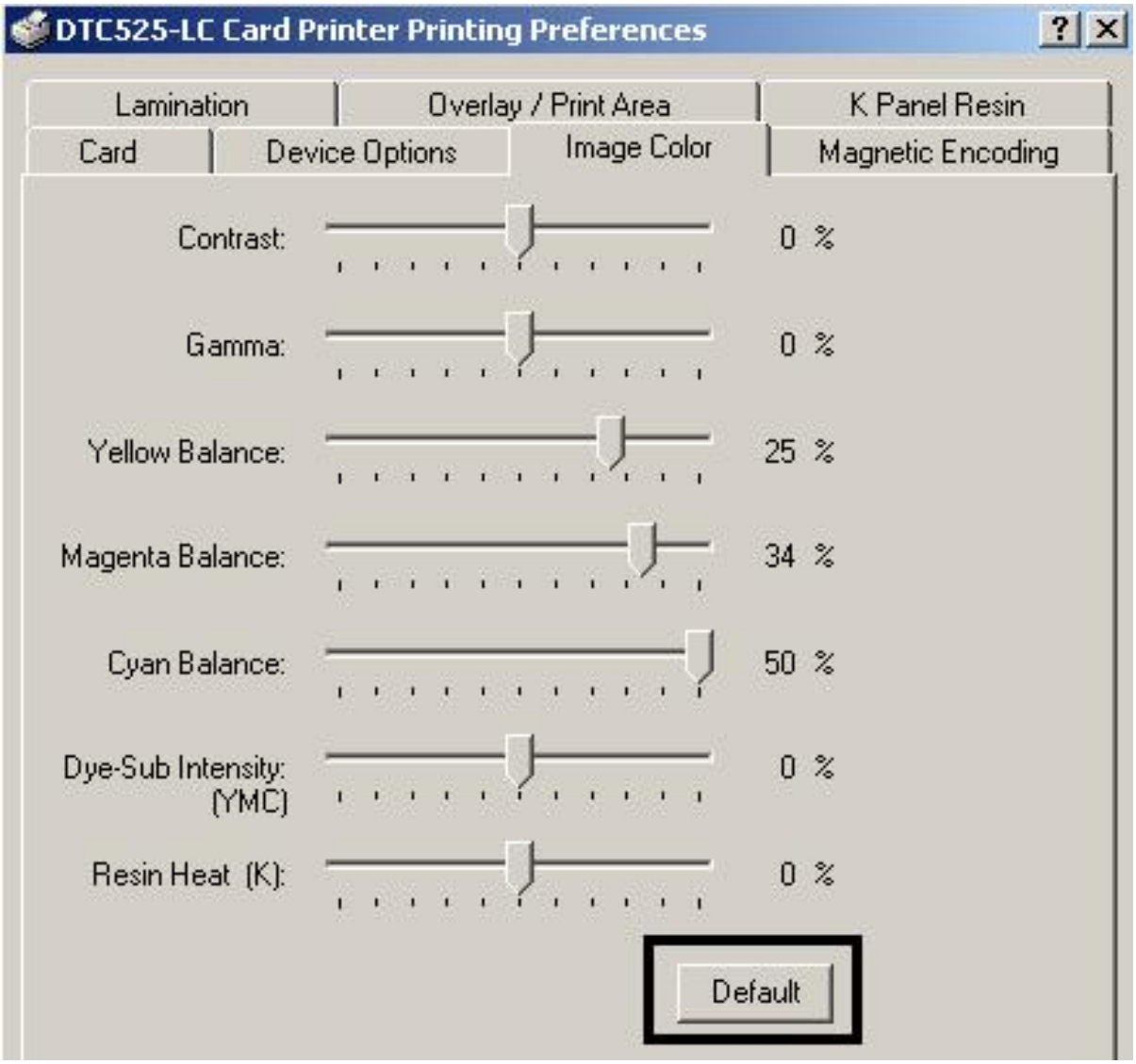


Using the Image Color tab (continued)

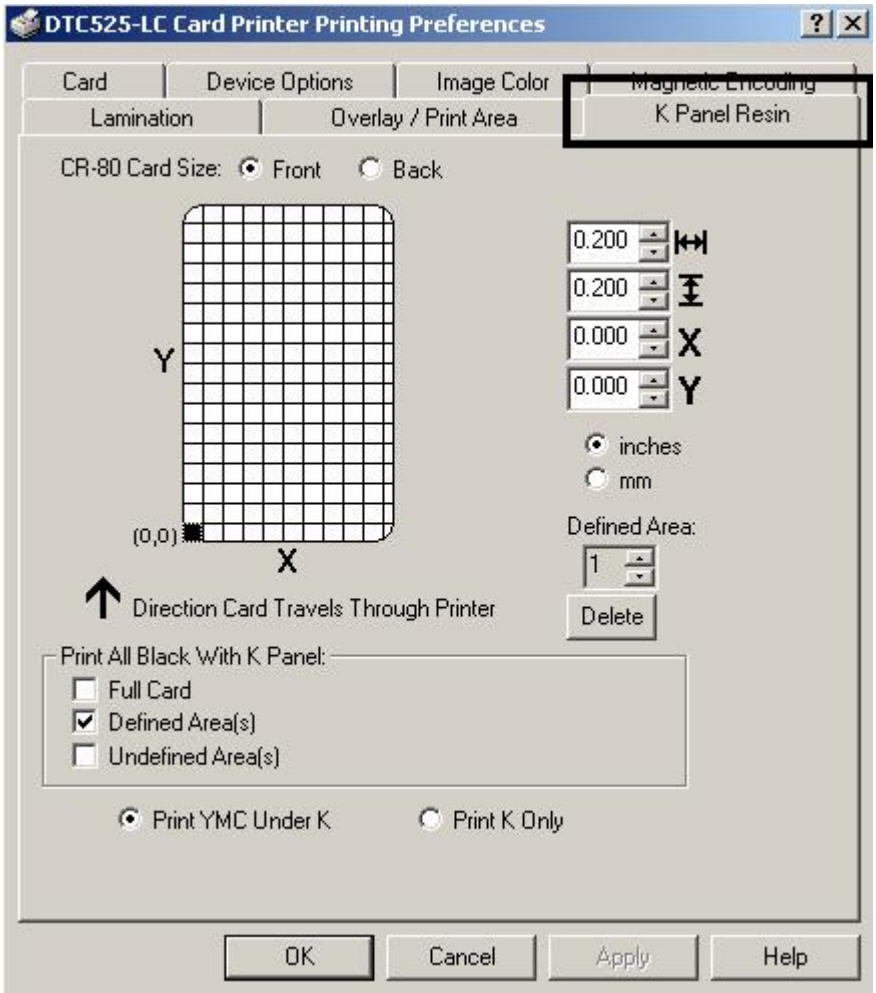
Step	Procedure
5	Return all options to their factory settings by clicking on the **Default** button.



Using the K Panel Resin tab

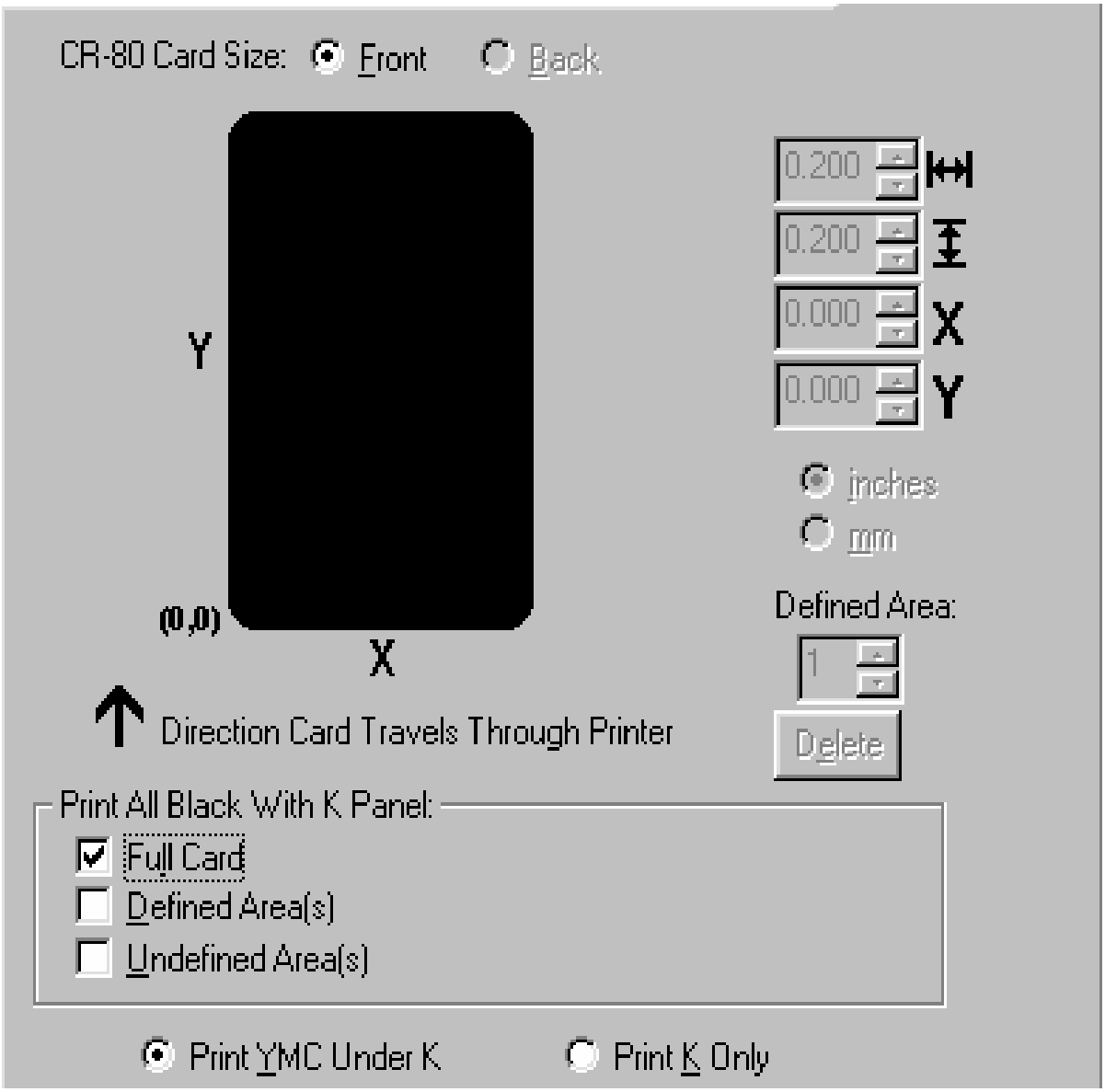
Use this tab to adjust the Print All Black with K Panel (options) and the Defined Areas. Use this tab to control where the resin black (K) panel of a full-color Ribbon is printed.

- Resin black text is desirable due to its sharp, saturated color and resin black barcodes are required to ensure readability when scanned by an infrared barcode reader. (**Note:** The Printer driver will automatically print all TrueType black text and TrueType barcodes only with the resin black (K) panel of the print Ribbon by default.)
- If printing black text or barcodes that are not TrueType fonts or black graphics, select one of the three options listed under **Print All Black with K Panel**. See the Selecting the Full Card with the K Panel Resin tab procedure on the next page. (**Note:** The Printer driver will print areas of the image where it finds black coloring with the print Ribbon's resin black (K) panel, as specified by each of the following options.)



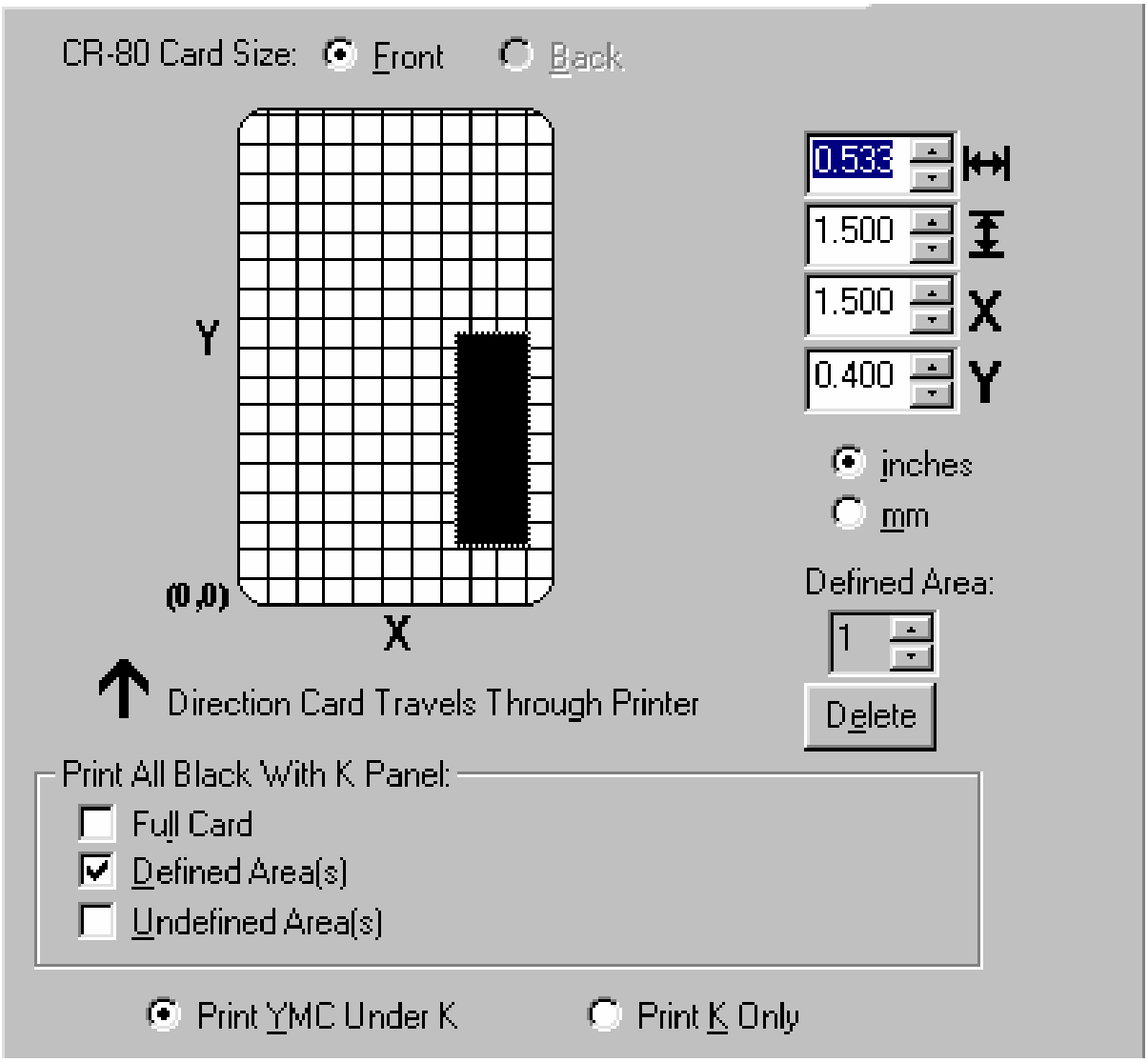
Selecting the Full Card with the K Panel Resin tab

Step	Procedure
1	Select the **Full Card** option to print the resin black (K) panel for all black found within all areas of the image, as shown below.



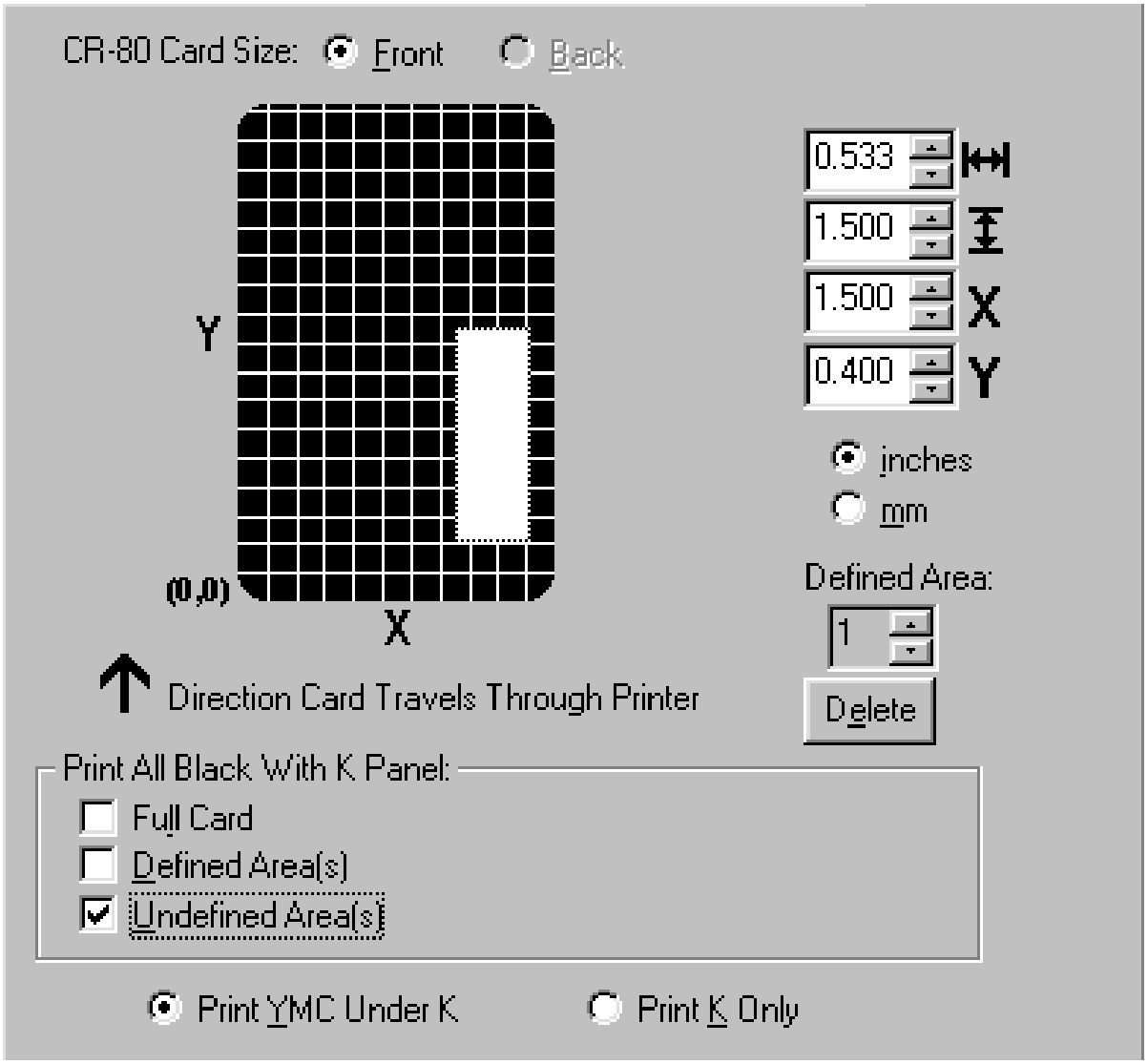
Selecting the Defined Area(s) with the K Panel Resin tab

Step	Procedure
1	Select the **Defined Area(s)** option to print the resin black (K) panel for all black found only in an area or areas defined, as shown below.



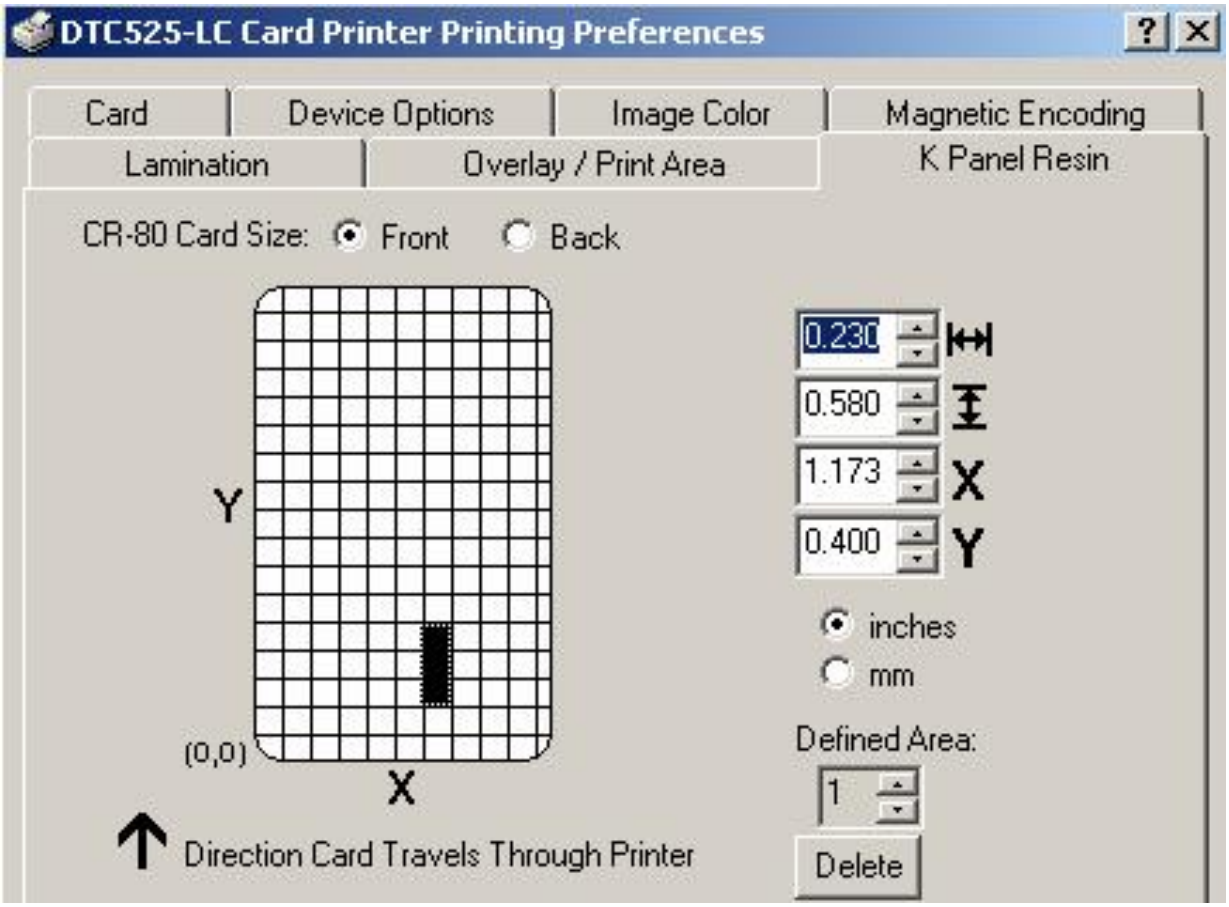
Selecting the Undefined Area(s) with the K Panel Resin tab

Step	Procedure
1	Select the **Undefined Area(s)** option to print the resin black (K) panel for all black found only in the space outside the areas defined, as shown below. (**Note:** In the card grid, black indicates the area in which the resin black (K) panel will be printed.)



Defining the Area to activate the Card Grid

Step	Procedure
1	Select on the appropriate **Defined Area** (see below) to activate the card grid in the upper half of the window. (**Note:** It is through this card grid that up to five areas can be defined, as shown below.) When the card grid is first activated, a small black square will appear at its: • default size of .2" x .2" (5mm x 5mm) • default location in the lower left-hand corner (0,0) (**Note:** This square represents the first defined area.)

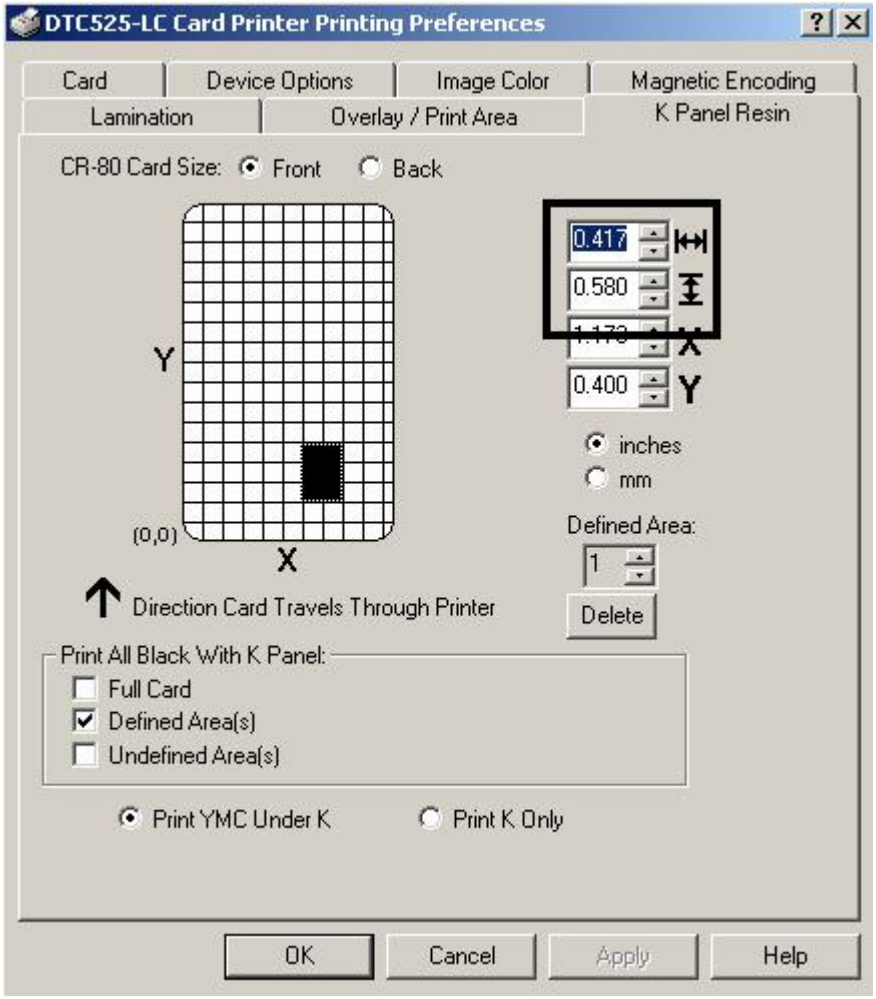


Measuring the Total Card area

Step	Procedure
1	Determine the area of the card to define. (**Note:** This area is indicated by the dashed outline, as shown below. The easiest way to determine the size of this area is to actually print a card and look at it in the same orientation as when it exits the Printer.)
2	Measure the total area and enter those dimensions into the Dimension boxes. (**Note:** The minimum size for an area is .2" x .2" (5mm x 5mm).) See the next page.

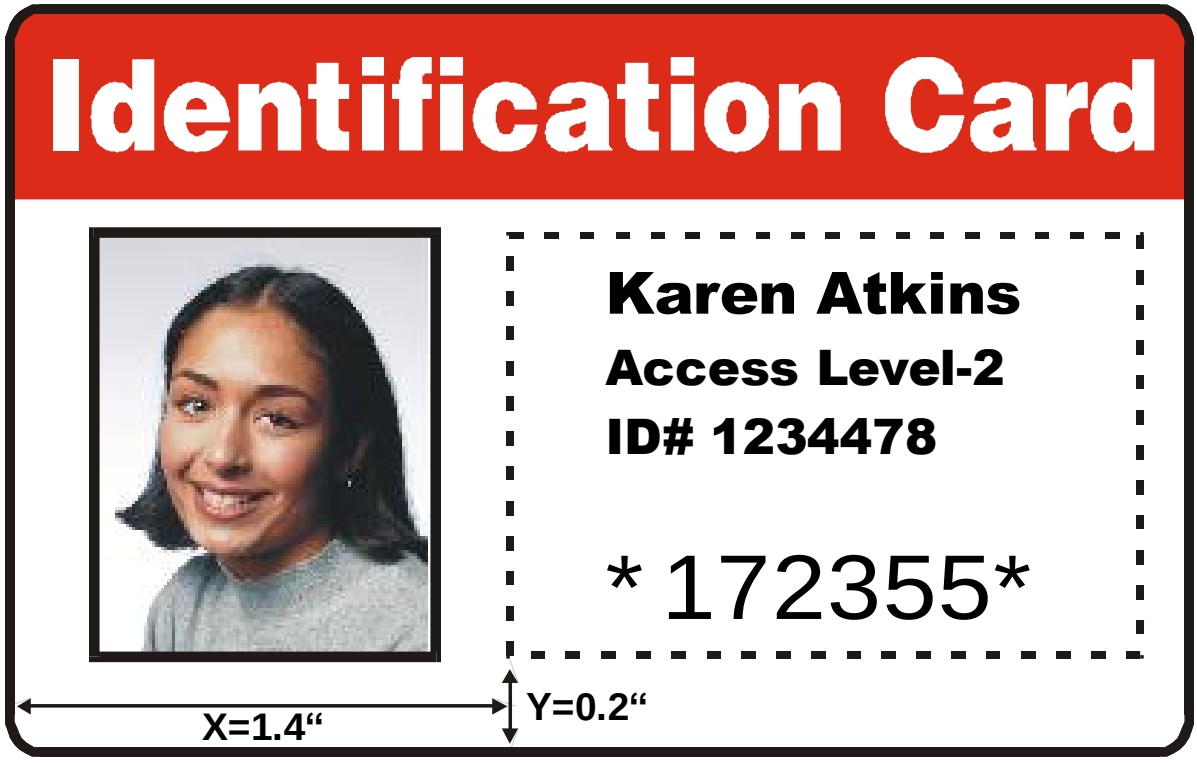
Measuring the Total Card area (continued)

See the previous procedure in this section.



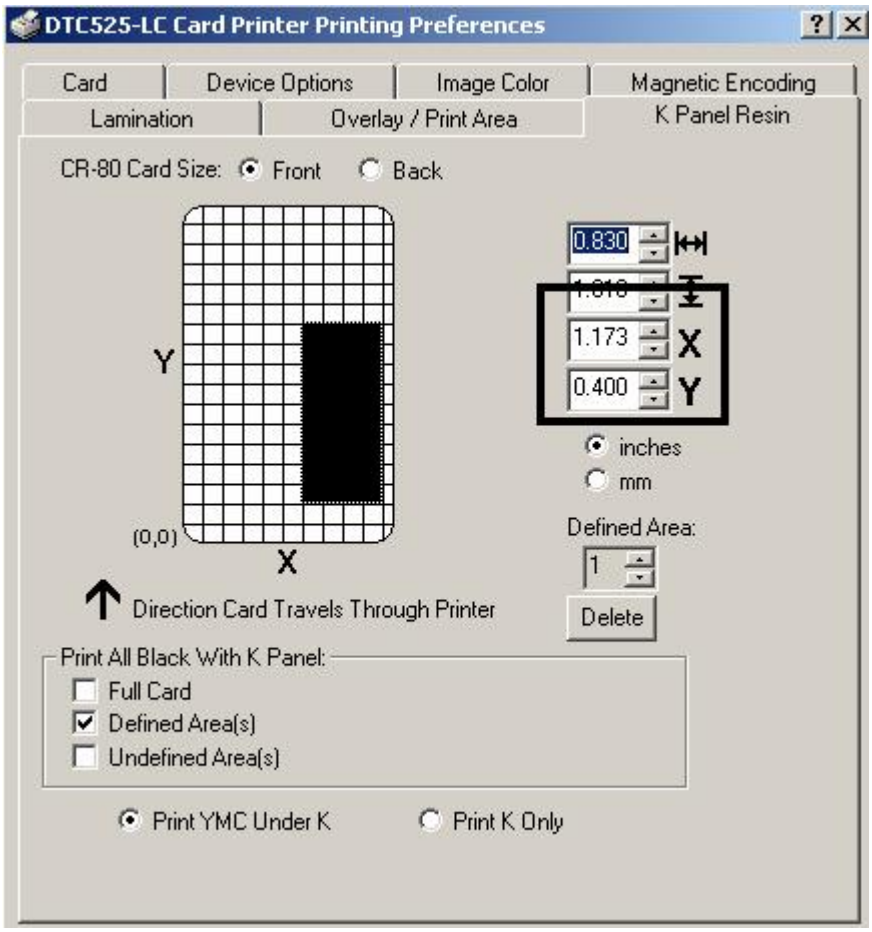
Defining the positioning of the area on the Card

Step	Procedure
1	Once the area is sized properly, measure the location where this area is to be positioned on the card. a. Measure from the lower left corner of the card up and over to the lower left corner of where the defined area is to begin. b. Enter these values into the X and Y boxes, as shown below. c. Note that the card grid lines are spaced at .2” (5mm) intervals.



Defining the positioning of the area on the Card (continued)

See the previous procedure in this section.



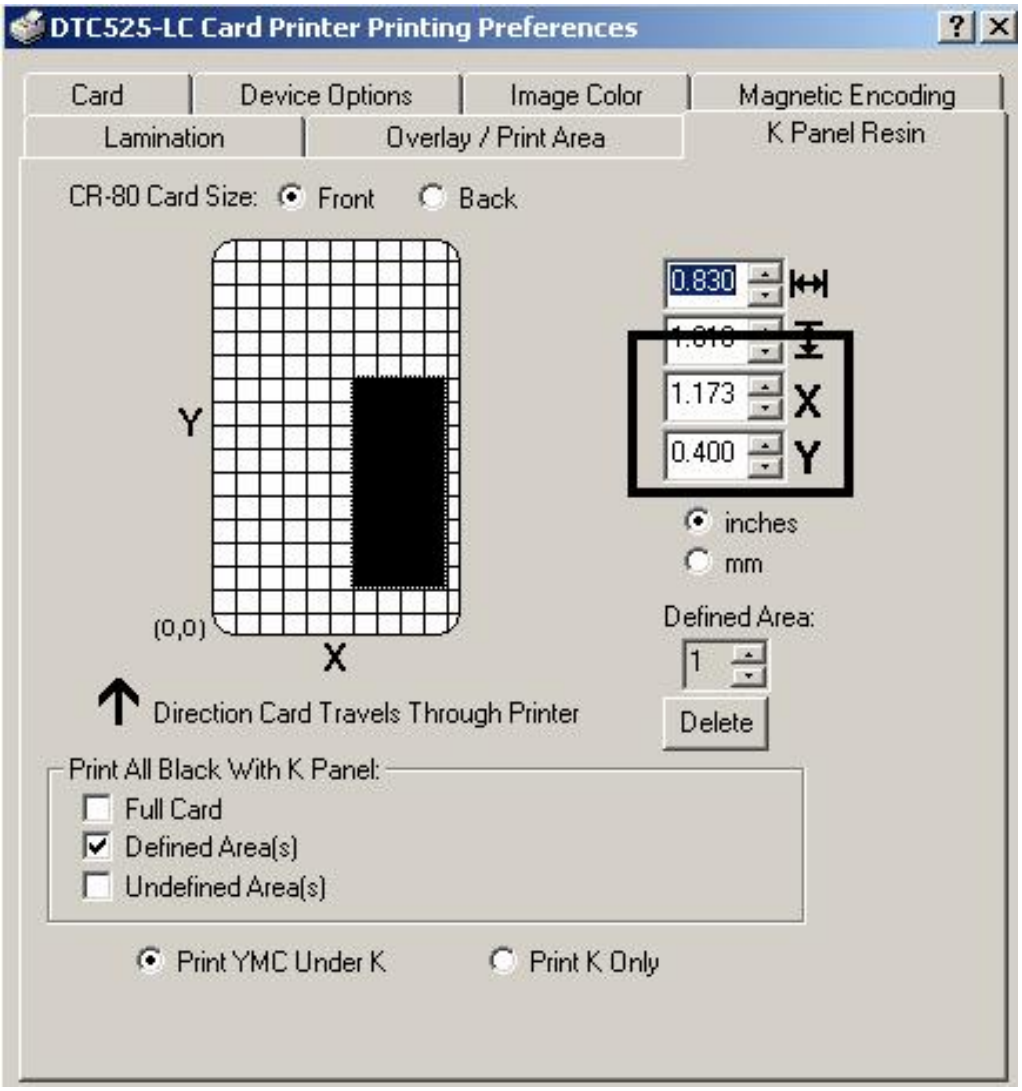
Selecting the Print YMC under the K and Print K Only options

Step	Procedure
1	Select the **Print YMC Under K** option to print all black in the designated areas with the Yellow (Y), Magenta (M) and Cyan (C) Ribbon panels directly beneath the resin black (K) panel. (**Note:** Select this option if printing resin black text or barcodes onto a colored background to provide a more gradual transition between the two.) **OR** Select the **Print K Only** option (a) to print all black in the designated areas only with the resin black (K) panel or (b) to print resin black onto a white background to maximize the sharpness of printed text and barcodes.

Continued on the next page

Selecting the Print YMC under the K and Print K Only options (continued)

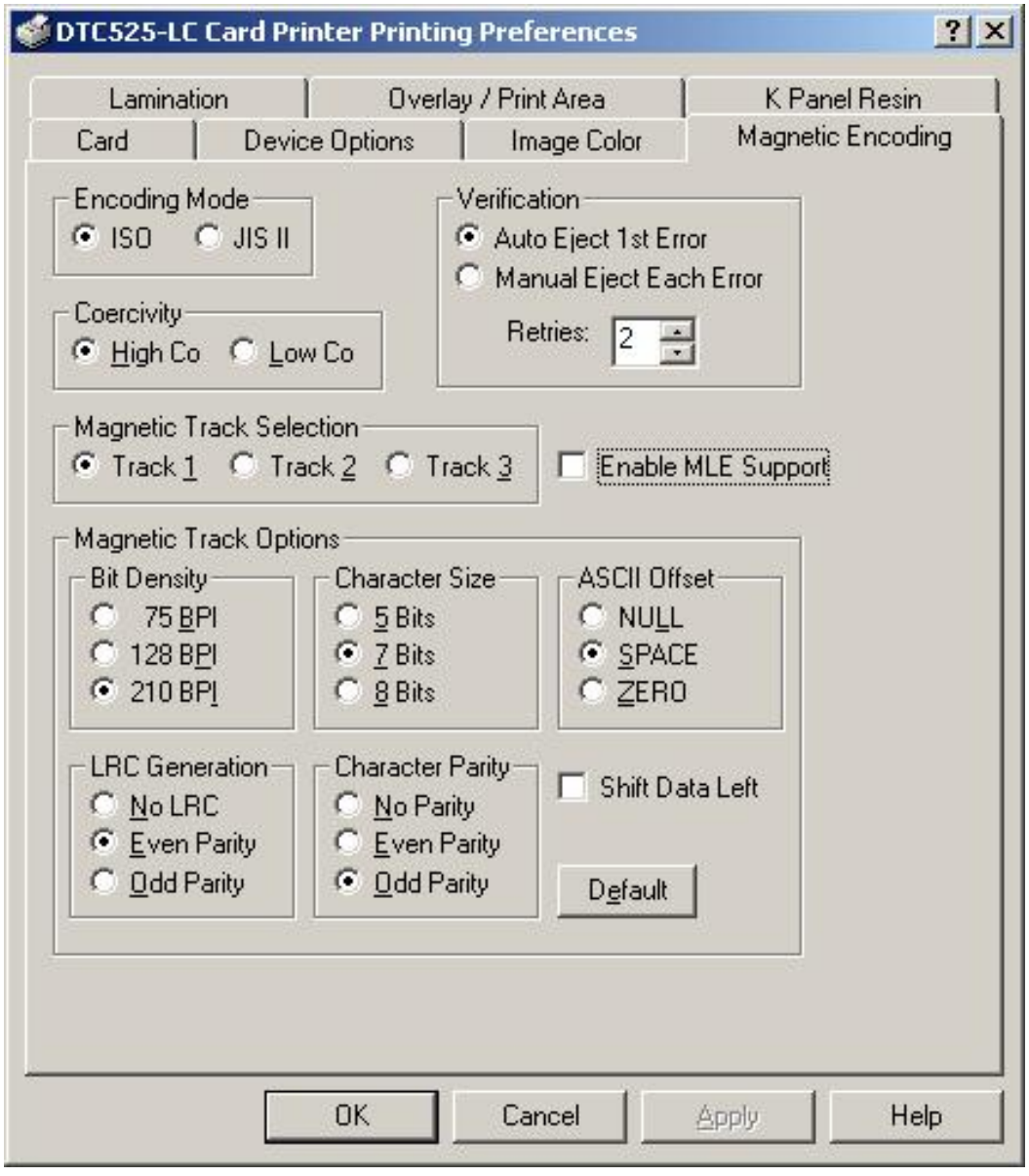
See the previous procedure in this section.



Using the Magnetic Encoding tab

Use these options only if the Printer has an optional Magnetic Stripe Encoding Module installed.

Step	Procedure
1	Select the **Magnetic Encoding** tab to display options for controlling the Magnetic Stripe encoding process. (**Note:** The following describes these options and the Printer's magnetic encoding process.)



Using the Encoding Mode option

Use the **Encoding Mode** option to specify which magnetic encoding standard to use.

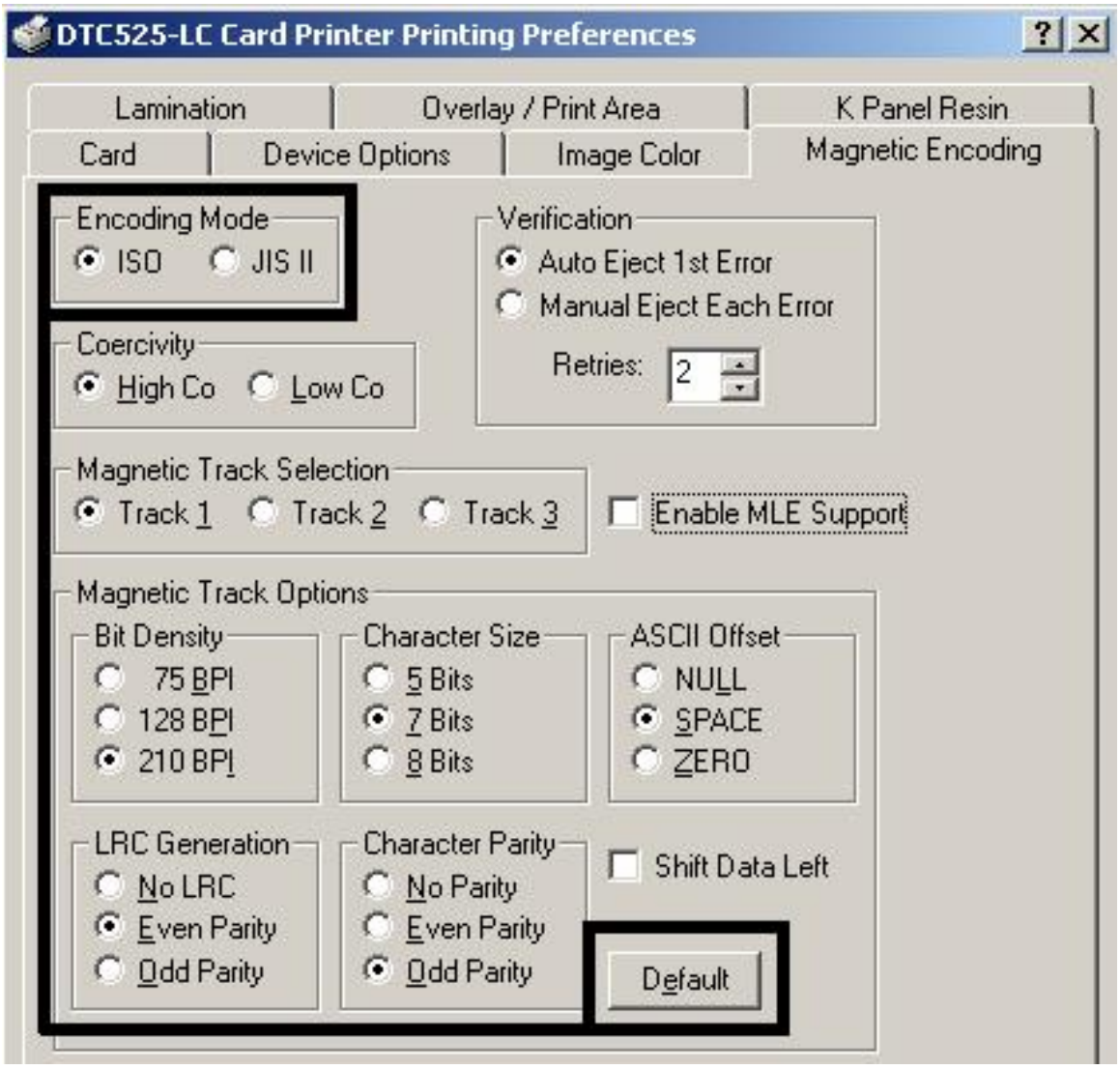
- The DTC500 Series Card Printer can be installed with one of two types of factory-installed Magnetic Stripe Encoding Modules.
- Change the encoding mode and Coercivity setting or modify the ISO standards for tracks 1, 2 and 3, by correctly modifying these Magnetic Encoding options.

Step	Procedure
1	Select the ISO Standard Encoding Module with a dual-Coercivity (high or low) encoding head. (**Note:** By default, the Printer driver is set to encode according to ISO standards onto High Coercivity Magnetic Stripes.) **OR** Select the JIS II Standard Encoding Module commonly used in Japan. Select the **JIS II** mode to encode only Track 2. (**Note #1:** The **JIS II** option provides encoding compatibility with the JIS C 6220 Type II cards commonly used in Japan. No encoding customization options are available with the JIS II mode.) (**Note #2:** The JIS II Magnetic Head must be installed in the Printer to use any of the **JIS II** options in the driver.)

Continued on the next page

Using the Encoding Mode option (continued)

See the previous procedure in this section.



Encoding the Mode/Coercivity/Magnetic Track Selection

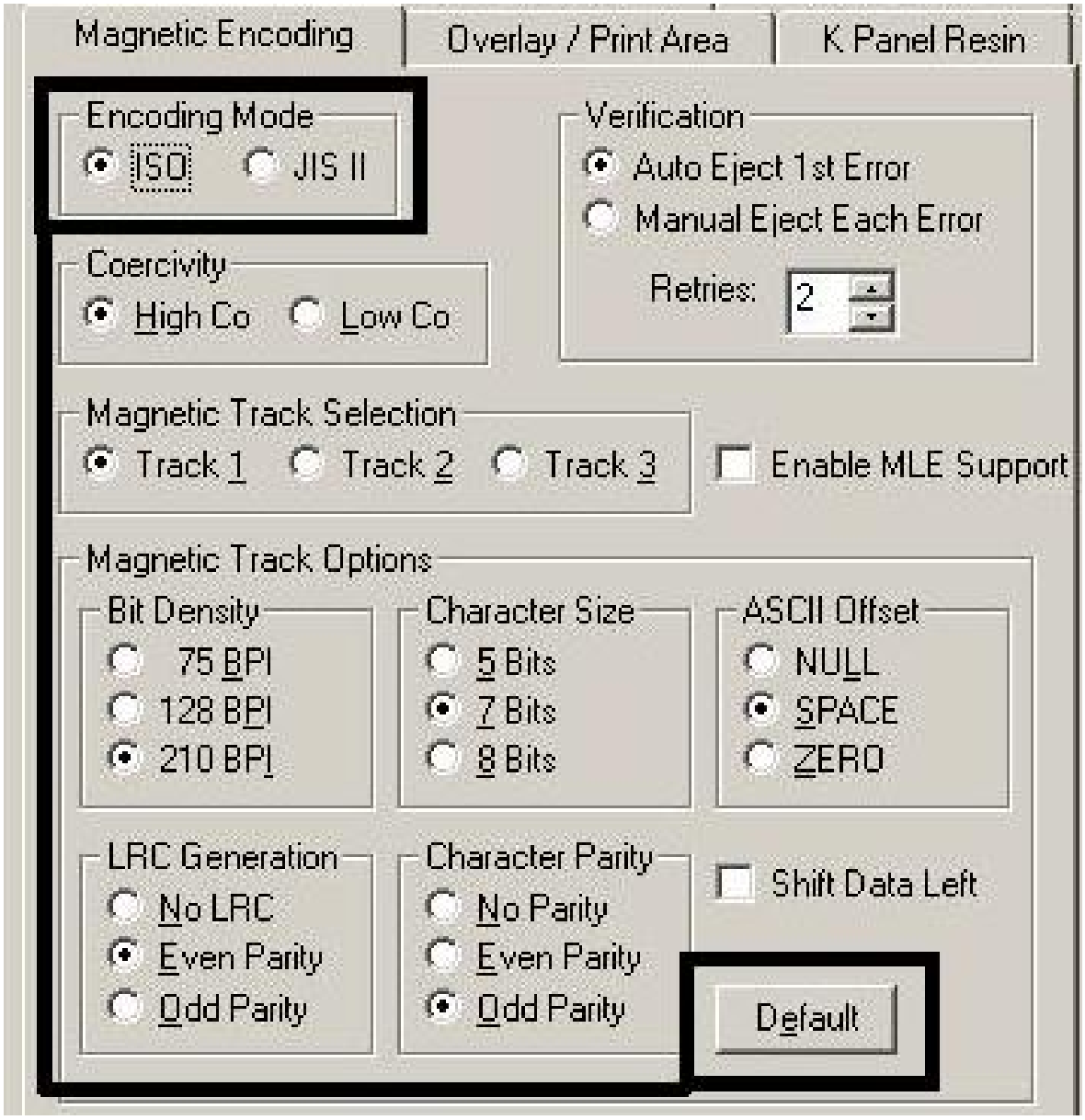
Use the **ISO** option for encoding capability for either high- or low-Coercivity cards on tracks 1, 2 and 3.

Step	Procedure
1	Select the **Coercivity** option to select the Magnetic Stripe type that matches the card type. • High Coercivity = 2500-4000 Oersted (Fargo's High Coercivity UltraCards are 2750Oe) • Low Coercivity = 250-600 Oersted (Fargo's Low Coercivity UltraCards are 300Oe)
2	Select the **Magnetic Track Selection** option to specify which track is to be configured through the **Magnetic Track** options (if the application being used requires customization of the standard ISO encoding process).
3	Customize these options if the application requires it; even though, the default **ISO Magnetic Track** options should be correct for most applications. (**Note:** All options must be changed separately for each of the three individual tracks.) a. Set these options back to the ISO standard settings once they have been changed by selecting the **Default** button for each of the separate tracks.

Continued on the next page

Encoding the Mode/Coercivity/Magnetic Track Selection

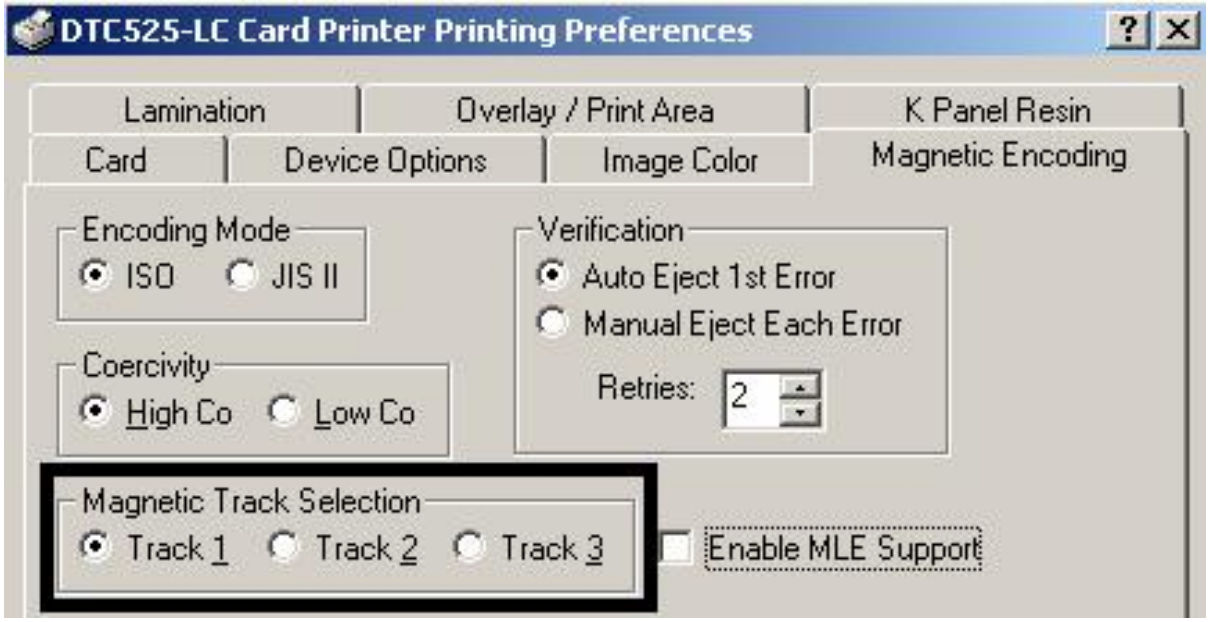
See the previous procedure in this section.



Using the Magnetic Track Selection option

Use these options to customize the ISO encoded data format for each of the Magnetic Stripe's three tracks.

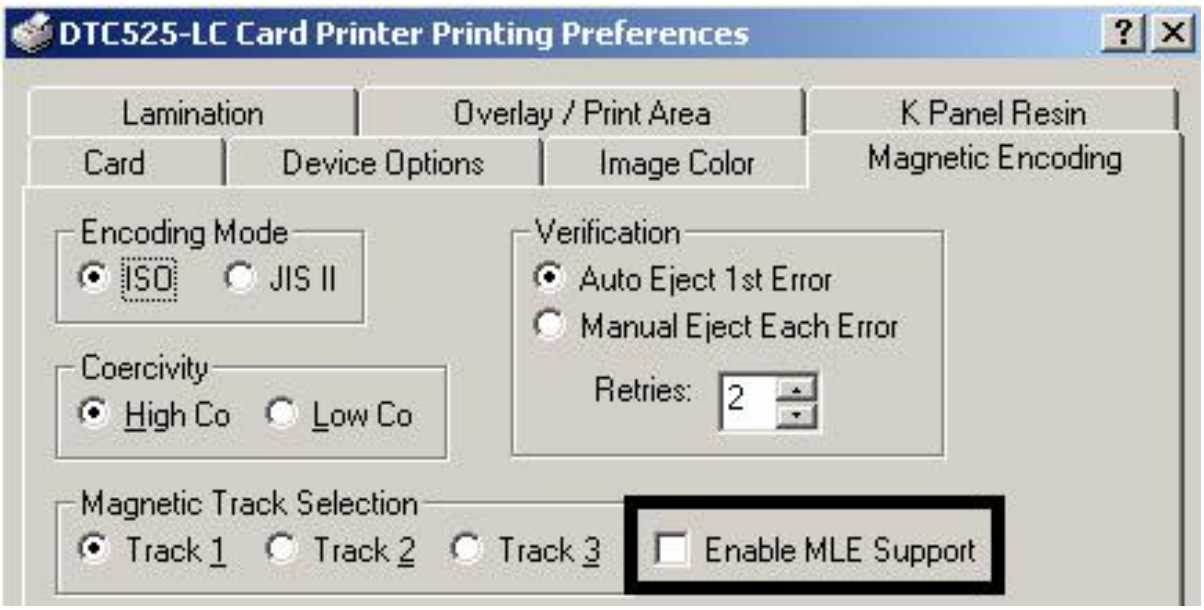
Step	Procedure
1	Specify which of the three (3) tracks to customize by selecting one of the three track options. • After making the required selection, the Magnetic Track options box displays the current set of customization options for the selected track. • Remember that each track must be customized independently of the other two tracks.



Reviewing the Enable MLE Support checkbox

Multi-Language Extension (MLE) support in Windows XP can cause text strings to be broken up into fragments. This fragmentation of the text string prevents magnetic encoding.

Step	Procedure
1	Check this box to allow the Driver to process the fragmented text.



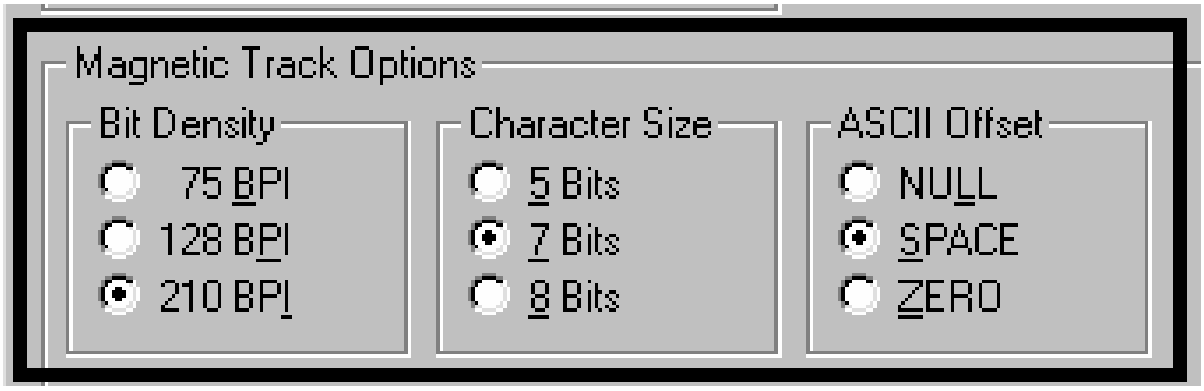
Using the Magnetic Track options

Use the **Magnetic Track** options for these purposes:

- Customize the ISO encoded data format for each of the Magnetic Stripe's three tracks.
- Customize each track independently of the other two.
- Specify which of the three tracks to customize by selecting one of the three track options.)

(**Note #1:** After making the required selection, the Magnetic Track options box displays the current set of customization options for the selected track.)

(**Note #2:** For most applications, the default settings for these options do not need to be changed.)



Using the Bit Density radio buttons

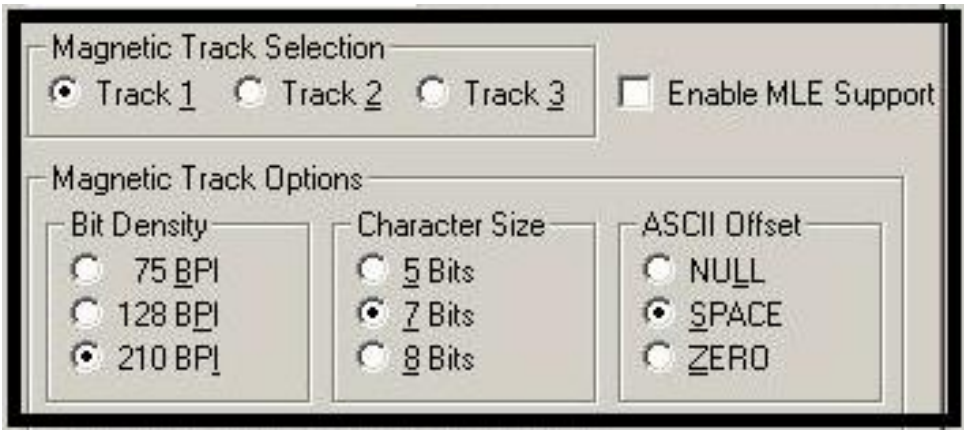
Use this option to customize the Bit Recording Density (Bits per Inch) used to encode the magnetic data on the currently selected track. The default ISO Standard selections for this option are as follows:

Step	Procedure
1	Select 75 BPI to change the bits per inch to 75 BPI. **OR** Select 128 BPI to change the bits per inch to 128 BPI. **OR** Select 210 BPI to change the bits per inch to 210 BPI.

Using the Character Size radio buttons

Use this option to customize the Character Data Size (Bits per Character) used to encode the magnetic data on the currently selected track. (**Note:** This character size includes the parity bit (if enabled).)

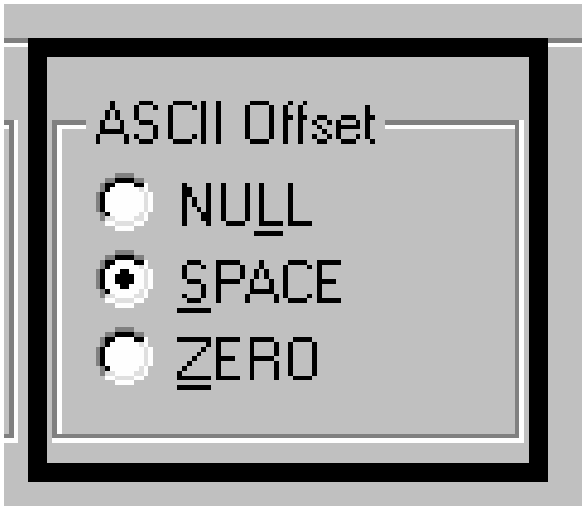
Step	Procedure
1	Select 5 Bits to change the bits per character to 5 BPC. **OR** Select 7 BPI to change the bits per character to 7 BPC. **OR** Select 8 BPI to change the bits per character to 8 BPC.



Using the ASCII Offset

Use this option to customize the Character ASCII Offset used to encode the magnetic data on the currently selected track. (**Note:** This character-offset value is subtracted from the ASCII value of each Magnetic Stripe data character prior to encoding on the track.)

Step	Procedure
1	Select NULL to change the ASCII Offset to NULL. **OR** Select SPACE to change the ASCII Offset to SPACE. **OR** Select ZERO to change the ASCII Offset to ZERO.



Using the LRC Generation radio buttons

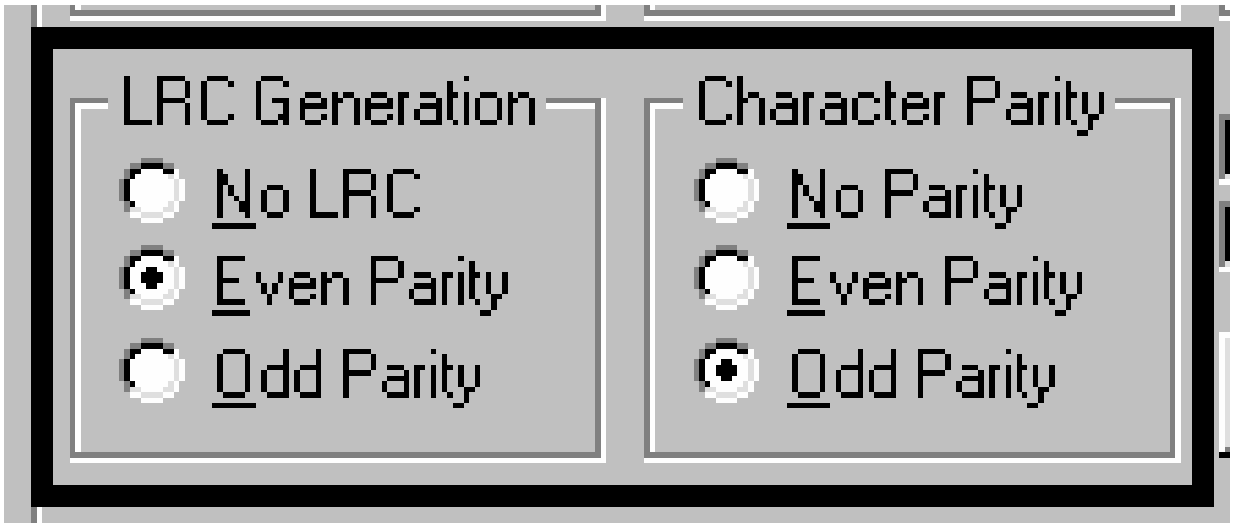
Use this option to customize the LRC Generation Mode (used to encode the magnetic data on the currently selected track).

Step	Procedure
1	Select NO LRC to change the LRC Generation to none. **OR** Select Even Parity to change the LRC Generation to Even Parity. **OR** Select Odd Parity to change the LRC Generation to Odd Parity.

Using the Character Parity radio buttons

Use this option to customize the Character Data Parity (used to encode the magnetic data on the currently selected track).

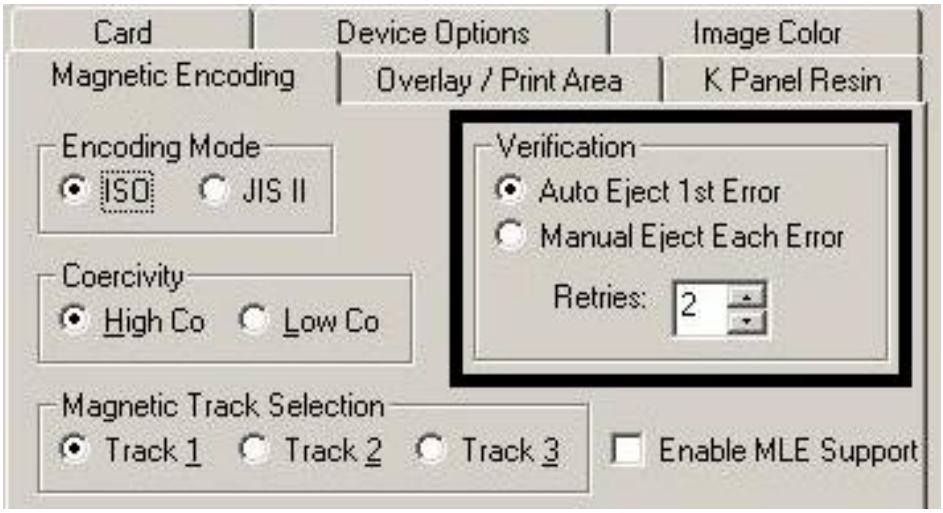
Step	Procedure
1	Select No Parity to change the Character Parity to none. **OR** Select Even Parity to change the Character Parity to Even Parity. **OR** Select Odd Parity to change the Character Parity to Odd Parity



Using the Verification option

Use the **Verification** option, which instructs the Printer to verify that all magnetic data has been correctly encoded on each card. (**Note:** with either of these options, the number of verification retries can be specified. A range of 1 to 5 retries is available.)

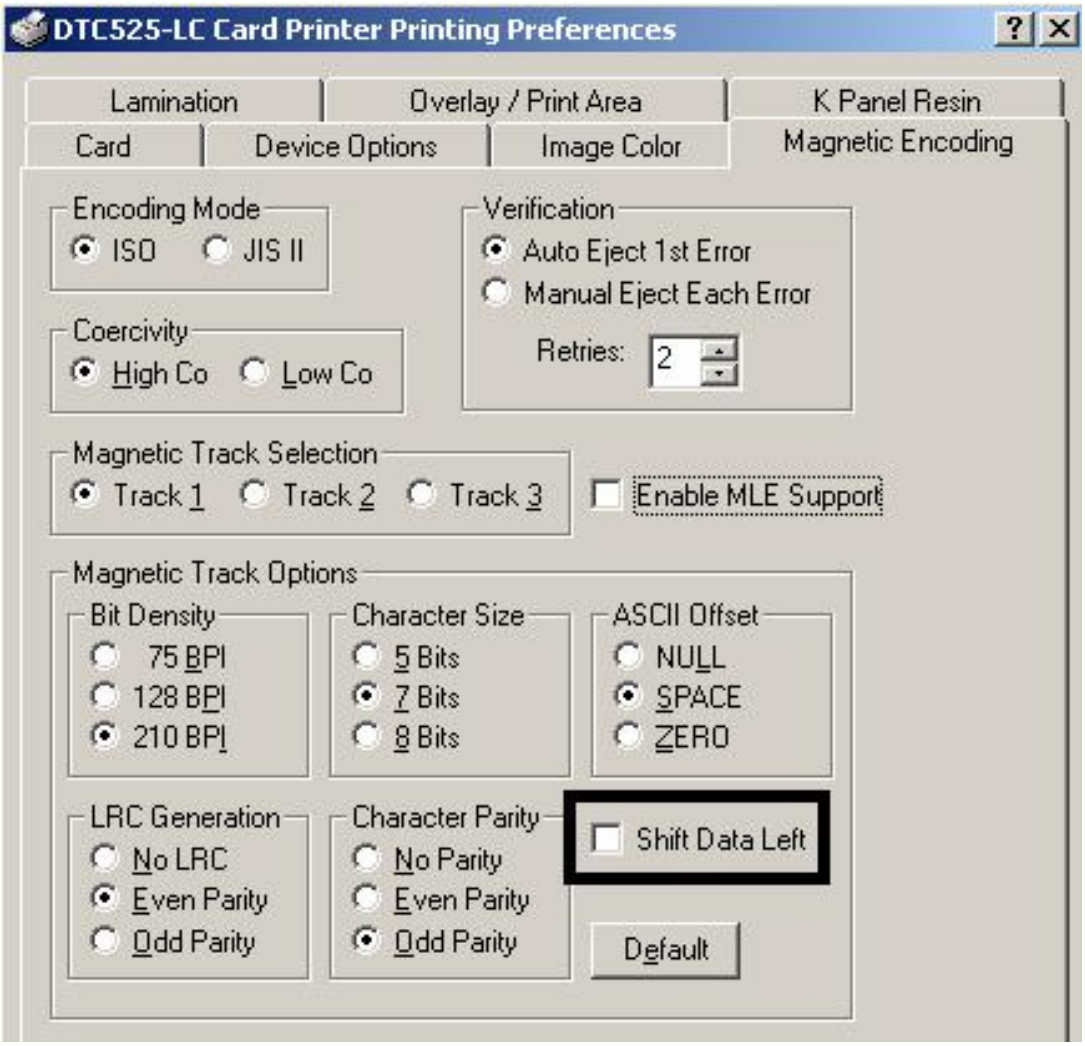
Step	Procedure
1	Select the **Auto Eject 1st Error** option, which instructs the Printer to automatically eject a card containing magnetic data (that cannot be verified). (**Note:** This option is helpful since Magnetic Stripe verification can sometimes require more than a single pass.) • **Manual Eject mode:** Only the first mistakenly verified card would be automatically ejected. If a second consecutive card cannot be verified, the Printer will signal an error and go into a **Manual Eject** mode. • **Auto Eject option:** The **Auto Eject** option is the most direct means of dealing with mistakenly-verified cards. However, it may be undesirable (if batch printing) since mistakenly-verified blank cards are ejected into the same stack as verified printed cards. **OR** Select the **Manual Eject Each Error** option so the Printer will signal an error on its LCD display (stating that the magnetic data could not be verified). (**Note:** When this occurs, press the **Cancel** soft key to manually eject the mistakenly verified card.)



Reviewing the Shift Data Left

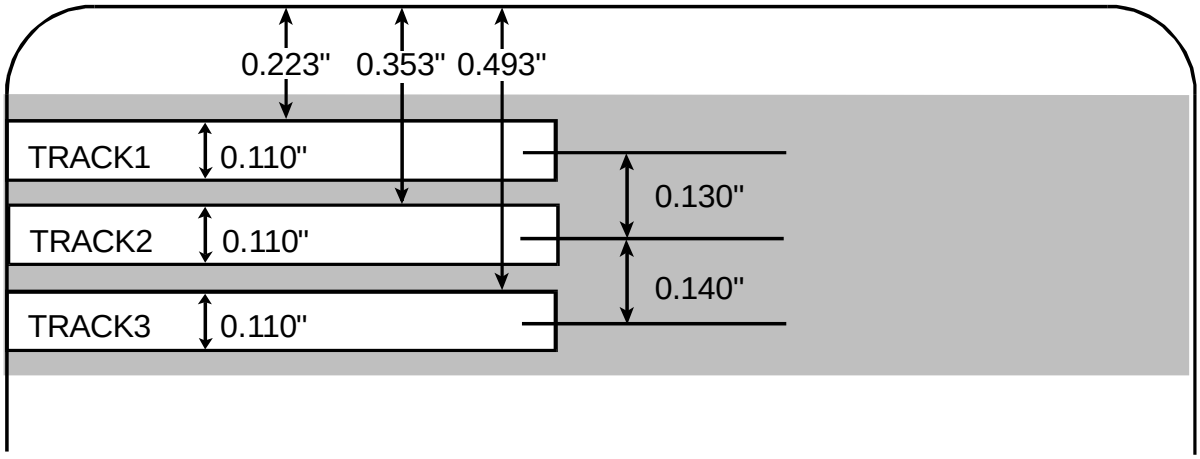
Use the **Shift Data Left** option, which applies to all tracks when selected.

Step	Procedure
1	Select this option to shift the recorded magnetic data to the left-hand side of the card's Magnetic Stripe. (**Note:** This is useful in situations that require cards to be readable with insert type readers.)



Reviewing the ISO Track Locations

The magnetic Encoding Module encodes onto tracks in accordance with an ISO 7811-2 Magnetic Stripe. For track locations, review the display below.



Reviewing the Sample String

- Sending Data to Track 1: ~1%JULIEANDERSON^1234567890?
- Sending Data to Track 2: ~2;12345678909876543 21?
- Sending Data to Track 3: ~3;12345678909876543 21?

Track	Start Sentinel	End Sentinel	Field Separator	Valid Characters	Maximum Number of Characters
Track 1	%	?	^	ASCII 32-95 (See Reviewing the ASCII Code and Character Table on page 197.)	78
Track 2	;	?	=	ASCII 48-63	39
Track 3	;	?	=	ASCII 48-63	106

Sending the Track Information

Magnetic track data is sent in the form of text strings from the application software to the Printer driver. Specific characters must be added to the magnetic data (to be encoded) in order for the Printer driver to differentiate between Magnetic Track data and the rest of the printable objects. (**Note:** These specify the data and the tracks to encode and mark the start and the stop of the data string.)

- **Automatic:** In some cases, these specific characters are automatically added to the string of track data by ID software applications.
- **Manual:** In most cases, the User must manually add these characters to the string of Magnetic Track data. (**Note:** If these characters are not added to the track data, the text intended for the Magnetic Track will appear as printed text on the card.)

To avoid this, track information must be entered as described below.

Step	Procedure
1	When entering track data, the "~" (tilde) character is entered first, followed by the track number (1, 2 or 3) on which the data should encode. This is followed by the data to be encoded. • **Start Sentinel and End Sentinel:** The first character of this data string must be the track's specific Start Sentinel (SS) and the last character must be the specific End Sentinel (ES). (**Note:** The characters or data in between the SS and ES can include all of the valid characters specific to each track.) • **Maximum Character Capacity:** The number of these characters, however, is limited by each track's maximum character capacity. • **Field Separator:** When segmenting track data, the appropriate Field Separator (FS) must be used. (**Note:** See the table on the next page, which displays the SS, ES, FS and the valid characters defined for each track.)

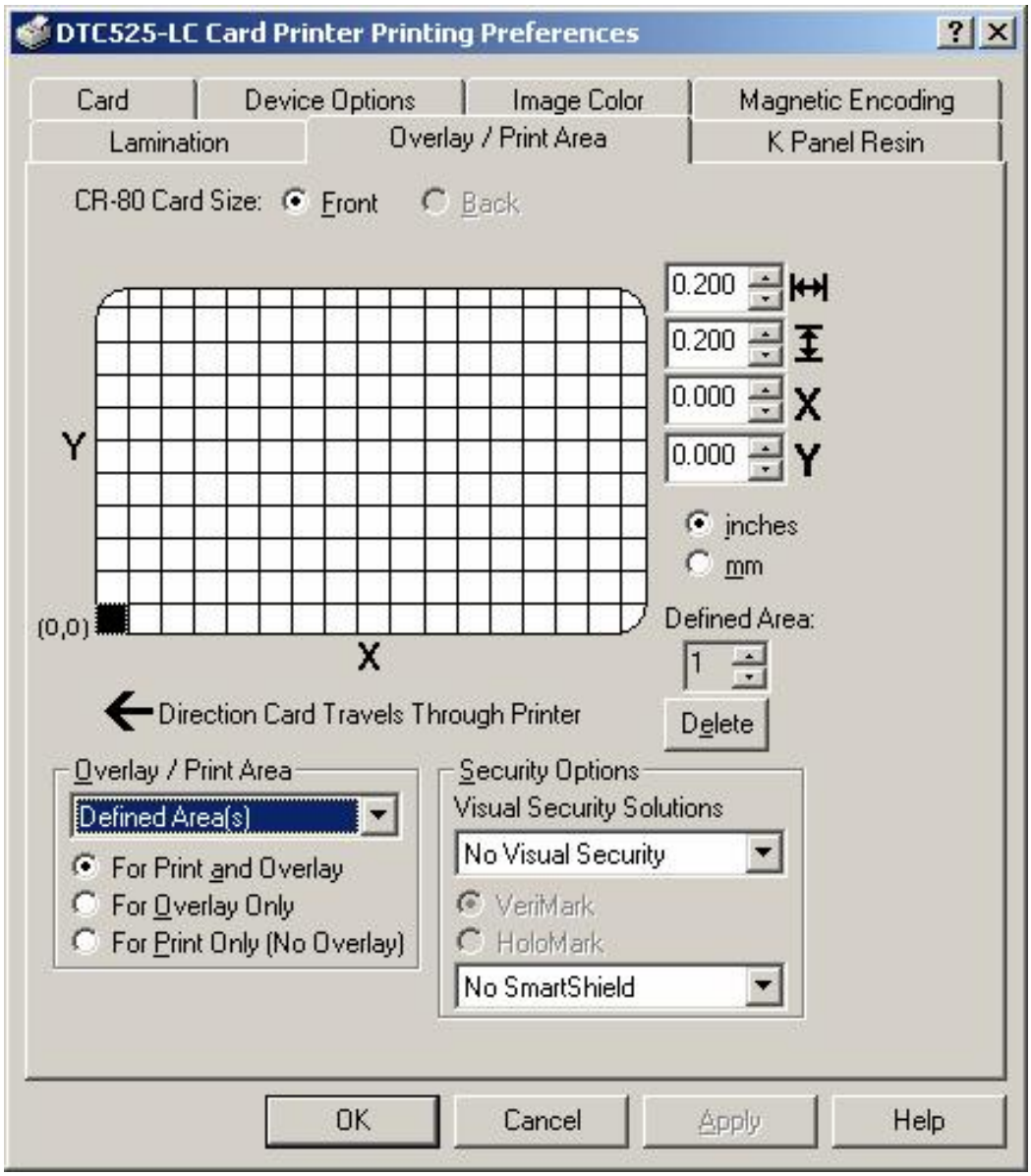
Reviewing the ASCII Code and Character Table

ASCII Code	Character	ASCII Code	Character	ASCII Code	Character
32	space	56	8	80	P
33	!	57	9	81	Q
34	"	58	:	82	R
35	#	59	;	83	S
36	$	60	<	84	T
37	%	61	=	85	U
38	&	62	>	86	V
39	'	63	?	87	W
40	(	64	@	88	X
41	)	65	A	89	Y
42	*	66	B	90	Z
43	+	67	C	91	[
44	'	68	D	92	\
45	-	69	E	93	]
46	.	70	F	94	^
47	/	71	G	95	_
48	0	72	H		
49	1	73	I		
50	2	74	J		
51	3	75	K		
52	4	76	L		
53	5	77	M		
54	6	78	N		
55	7	79	O		

Using the Overlay/Print Area tab

Use this option to control how the Overlay (O) Panel and/or the print area will appear on a card. (**Note:** This option is helpful if, to omit the overlay or printing around a card's smart chip or Magnetic Stripe. By default, this option is set to print and overlay the entire card.)

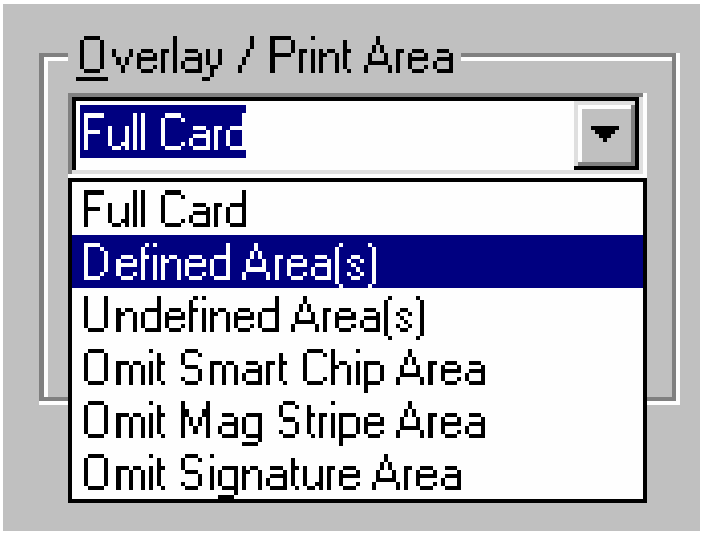
Continued on the next page



Using the Overlay/Print Area dropdown menu

Step	Procedure
1	Select the **Full Card** option for the Printer to overlay and/or print the entire card. **OR** Select the **Defined Area(s)** option for the Printer to overlay and/or print only in the selected and defined area or areas. **OR** Select the **Undefined Area(s)** option for the Printer to overlay and/or print only in the space outside the selected and defined area. **OR** Select the **Omit Smart Chip Area** option for the Printer to overlay and/or print only in the space outside the standard location of a smart chip. **OR** Select the **Omit Mag Stripe Area** option for the Printer to overlay and/or print only in the space outside the standard location of an ISO Magnetic Stripe. **OR** Select the **Omit Signature Area** option for the Printer to overlay and/or print only in the space outside the standard location of a signature panel. (**Note:** In the card grid, black indicates the area in which the overlay and/or printing will be applied.)

Continued on the next page

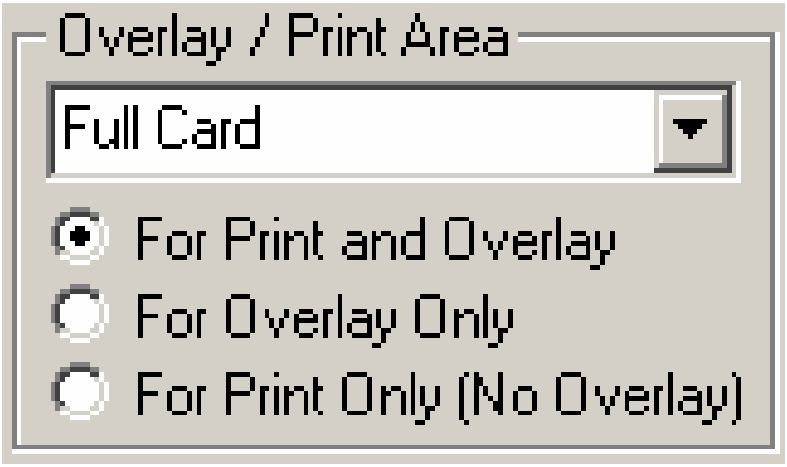


Using the Overlay/Print Area

Use these **Overlay/Print Area** options to control both the print and overlay together or control each individually.

Step	Procedure
1	Select **For Print and Overlay** for the defined area to apply to both the printing and overlay process. **OR** Select **For Overlay Only** for the defined area to apply only to the overlay process. (**Note:** In this mode, printing will still be allowed over the entire card and only the overlay will be affected.) **OR** Select **For Print Only (No Overlay)** for the defined area to apply only to the print process. (**Note:** In this mode, the overlay is completely disabled; so it will not be applied.) **Caution:** An overlay or an overlaminate must protect Dye-Sublimation printing or it will quickly begin to wear or fade.

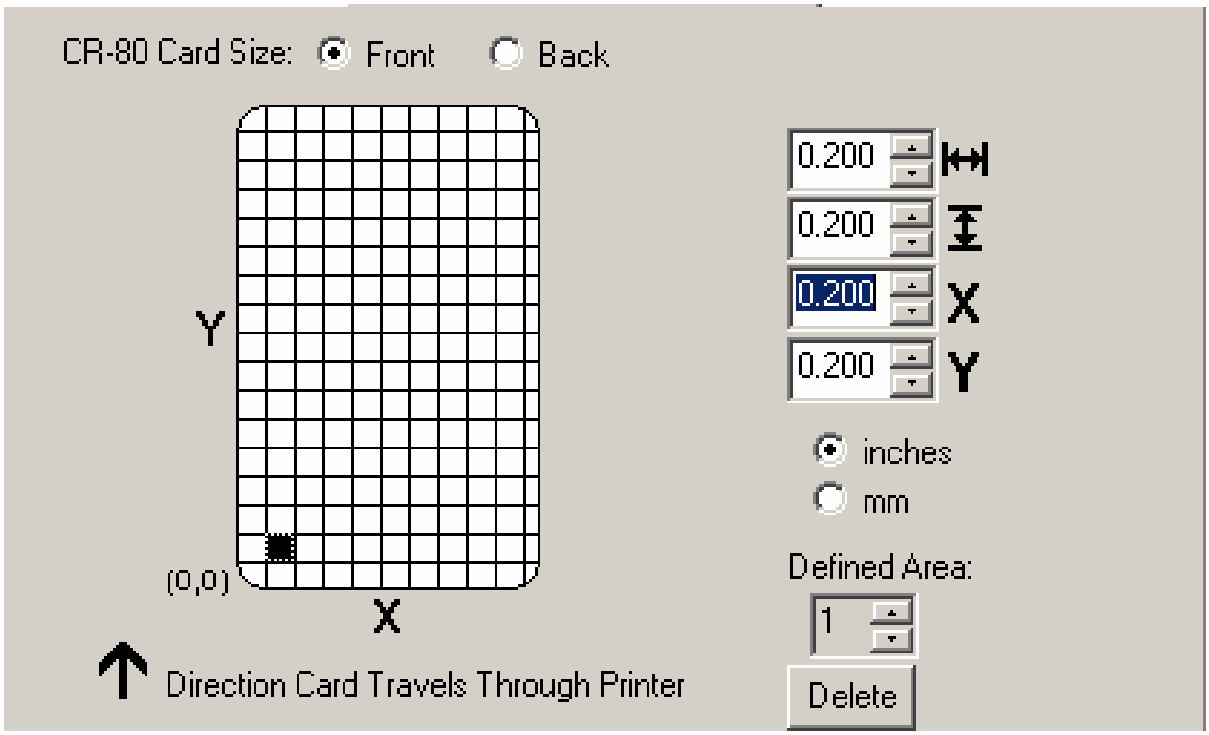
Continued on the next page



Using the Overlay/Print Area (continued)

Step	Procedure
1	Select the **Defined Area(s)** option to activate the card grid in the upper half of the window. (**Note:** This allows defined areas to be created. It is through this card grid that up to five areas can be defined.)

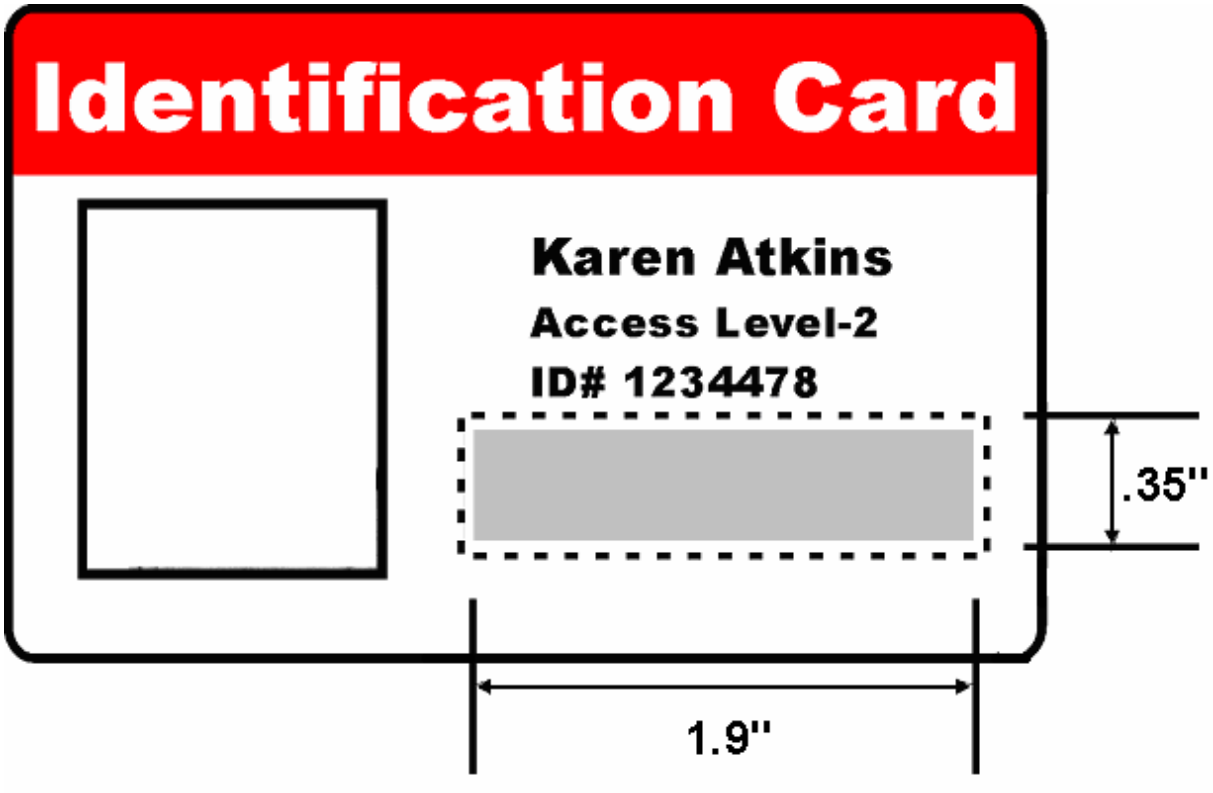
Continued on the next page



Using the Overlay/Print Area (continued)

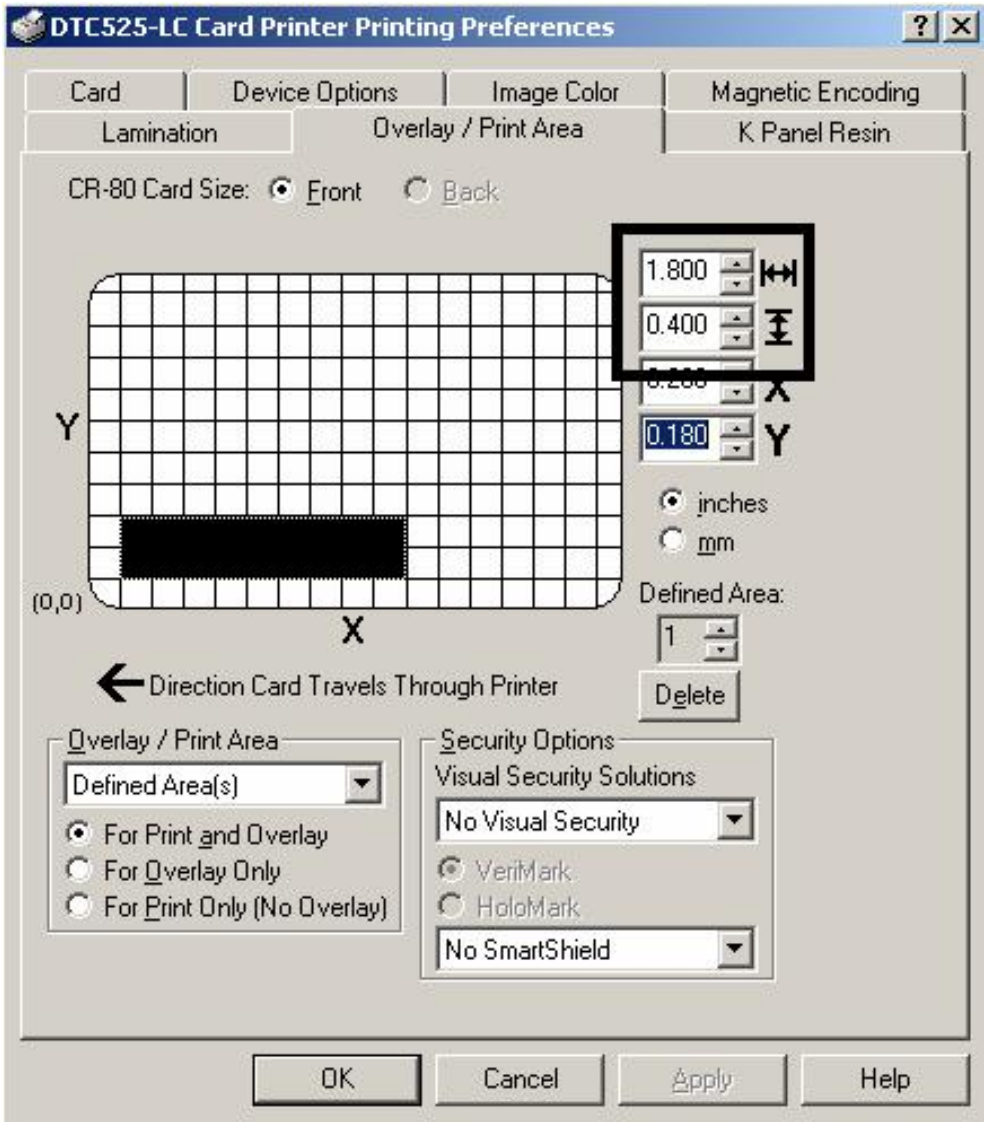
Step	Procedure
2	When the card grid is first activated, a small black square will appear at its default size of .2" x .2"/5mm x 5mm and at its default location in the lower left-hand corner (0,0). (**Note:** This square represents the first defined area.) • Determine the area size by actually printing a card and looking at it in the same orientation as when it exits the Printer.
3	Measure the total size of the desired area and enter those dimensions into the Dimension boxes. (**Note:** The minimum size an area is .2" x .2"/5mm x 5mm.)

Continued on the next page



Using the Overlay/Print Area (continued)

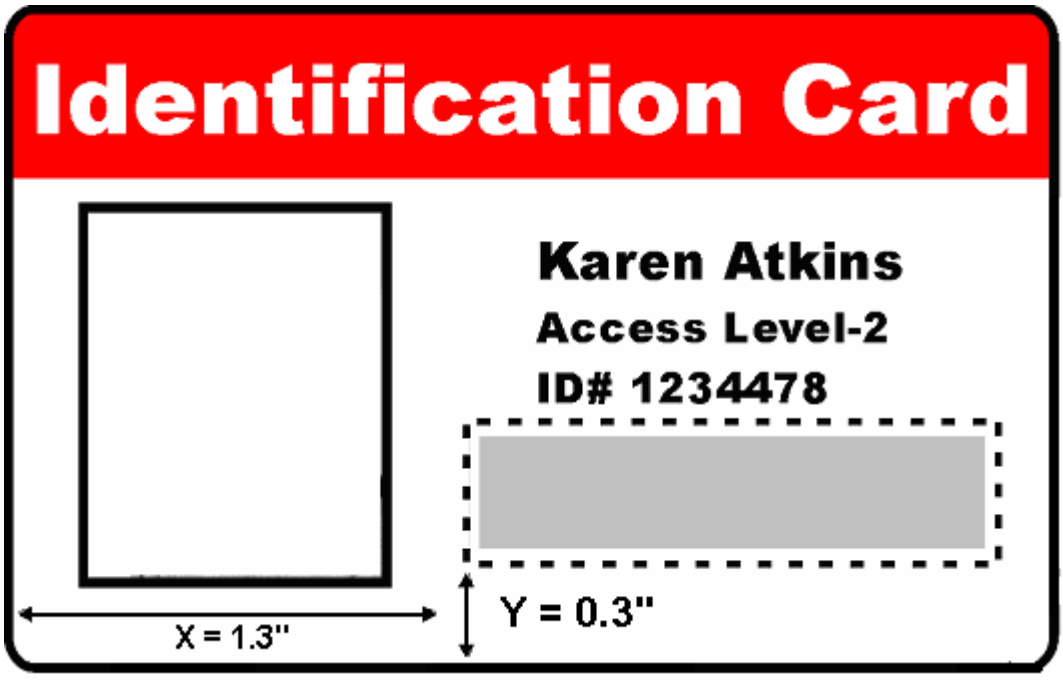
See the previous procedure in this section.



Using the Overlay/Print Area (continued)

Step	Procedure
4	Follow this procedure once the area is sized properly. a. Measure the location this desired area to be positioned on the card. b. Measure from the lower left corner of the card (up and over) to the lower left corner (for the defined area to begin). c. Enter these values into the X and Y boxes. (**Note:** The card grid lines are spaced at .2 inch/5mm intervals.)

Continued on the next page



Using the Overlay/Print Area (continued)

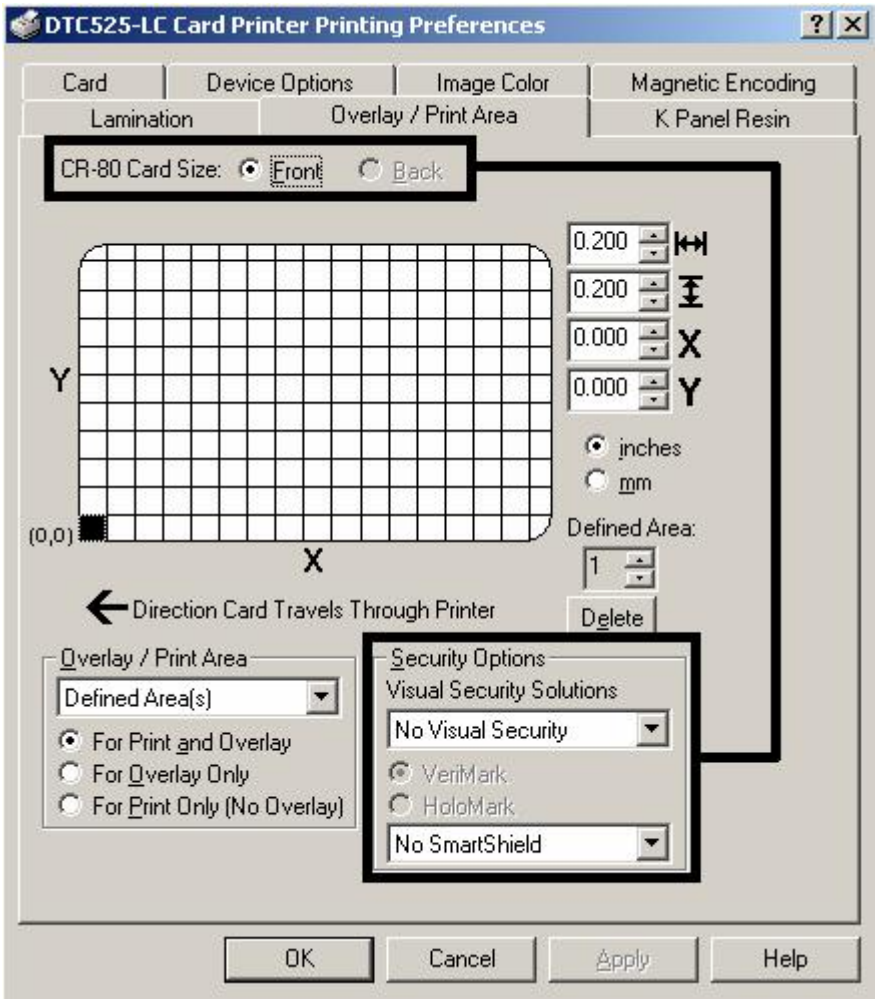
Step	Procedure
5	a. Print the card design. b. Observe how the image is oriented on the card as it ejects from the Printer. (**Note:** The location of a defined area is based on the card orientation as it exits the Printer.) c. Measure the defined area location based on the printed card. (**Note:** If selecting the Rotate Front 180 Degrees option, the image will appear upside down as it exits the Printer.) d. Position the defined area opposite to the measurement of the onscreen card design (which will appear right side up).
6	Use the Defined Area arrows to navigate back and forth from area to area. (**Note:** The active area will always be highlighted with a dotted outline.) a. Define another area by clicking on the Defined Area UP arrow. • Another .2" x .2"/5mm x 5mm area will appear in the lower left-hand corner. (**Note:** This is the location in which all newly defined areas will first appear.) • Up to 5 areas can be defined. However, additional areas cannot be added until the most recently created area has been moved or sized. (**Note:** For this reason, size and position each area as it is created.) b. Define areas for both the front and back sides (as needed) if printing onto both sides of the card. c. Delete an area by using the Defined Area arrows to select the area and click on the **Delete** button. (**Note:** If all areas are deleted, the **Overlay/Print Area** options will automatically be deselected.)

Using Security Options (Visual Security Solutions)

The Visual Security Solutions dropdown menu list will be used to enable and select which type of visual security will be used. The Visual Security dropdown list will be selectable only on the Front side (see below). Visual Security is not an option for the back side.

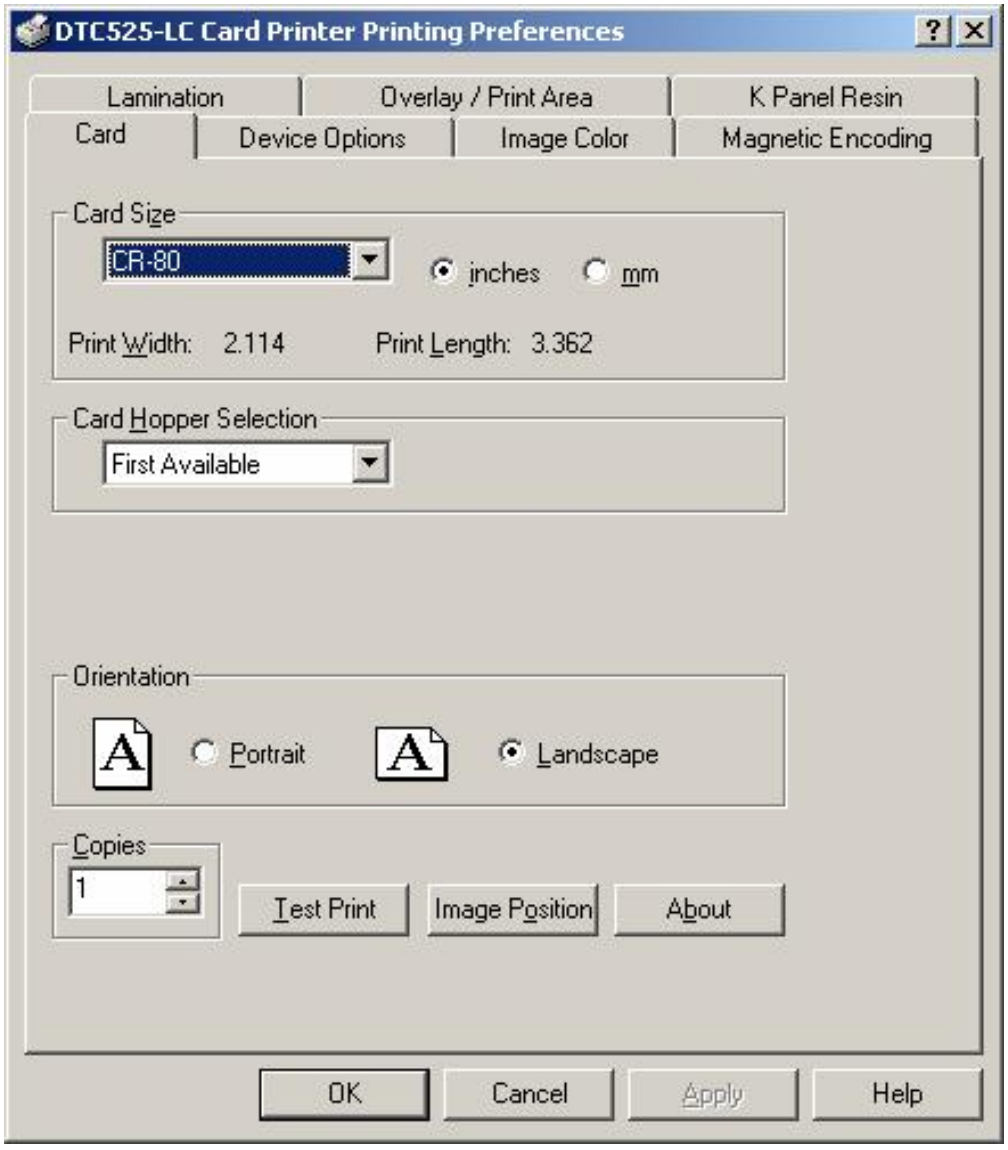
The following actions will occur when one of the Visual Security locations is selected.

- The Overlay/Print Area will be disabled.
- SmartShield will be disabled.
- The Foil Options become selectable.



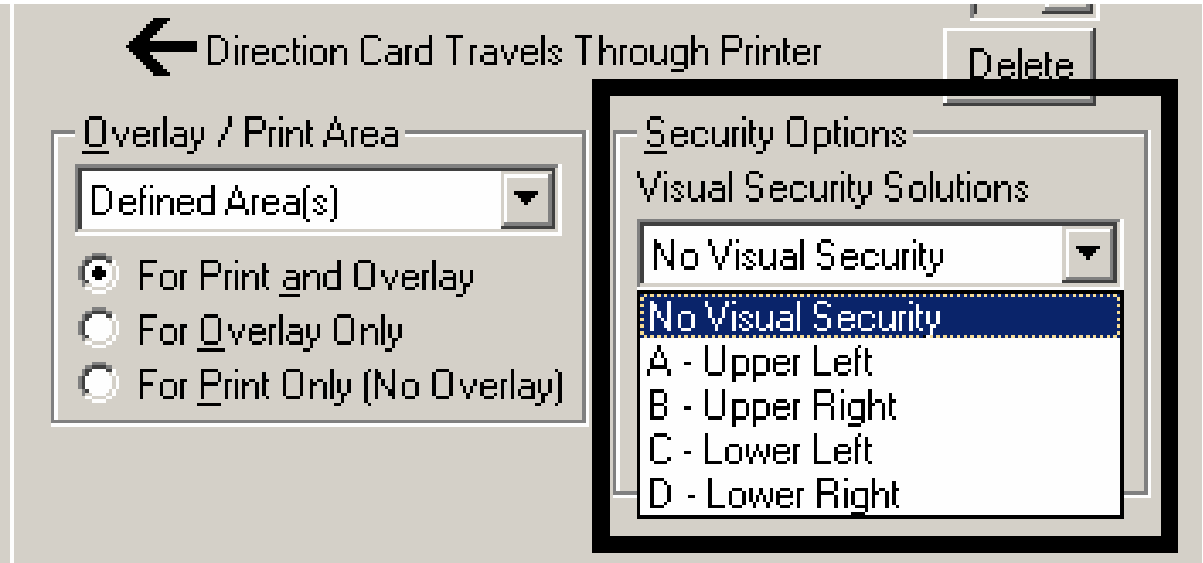
Selecting Orientation - Landscape under Card tab

Step	Procedure
1	Select the Landscape radio button (below) under Orientation under the Card Size tab to use the Visual Security Solutions (A to D), as shown in this window.



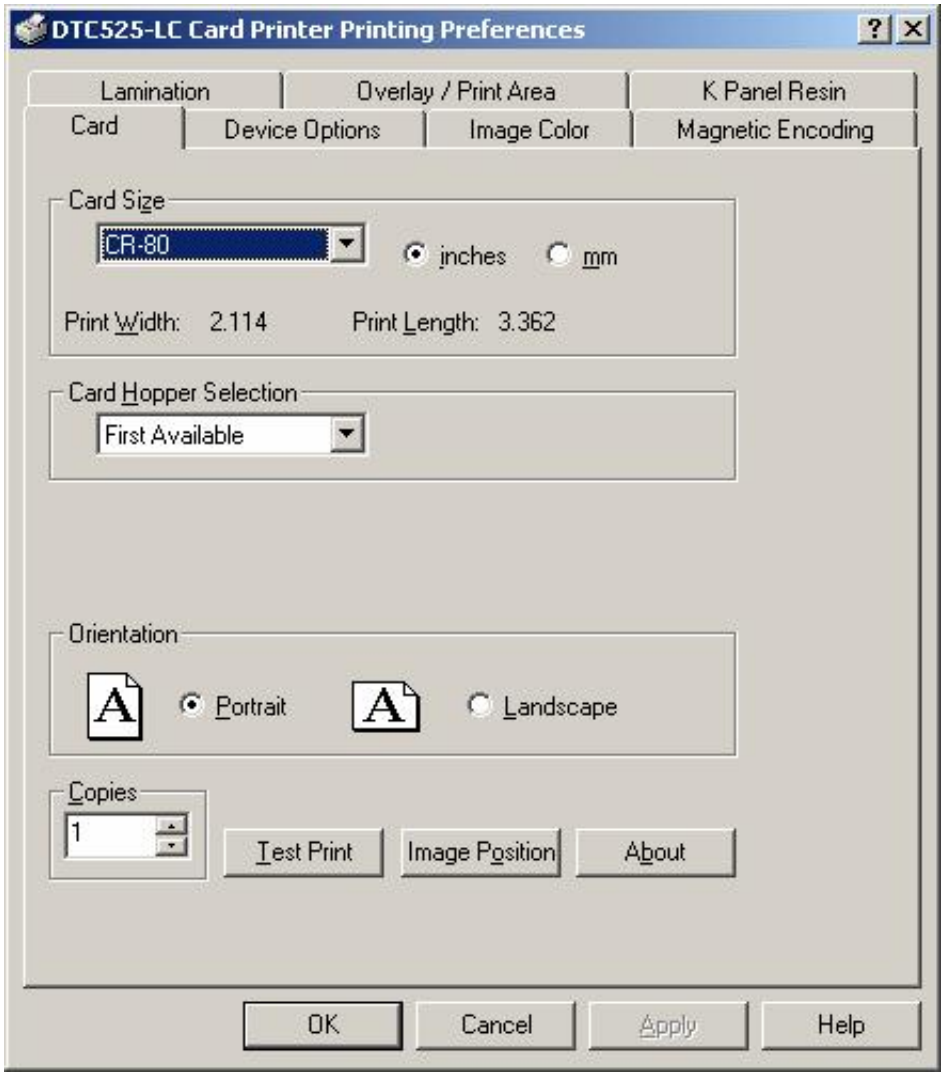
Selecting the Visual Security Solutions dropdown menu (A to D)

Step	Procedure
1	Click on the Visual Security Solutions dropdown menu (below) under the Landscape - Orientation (see above) to use the options shown in this display.



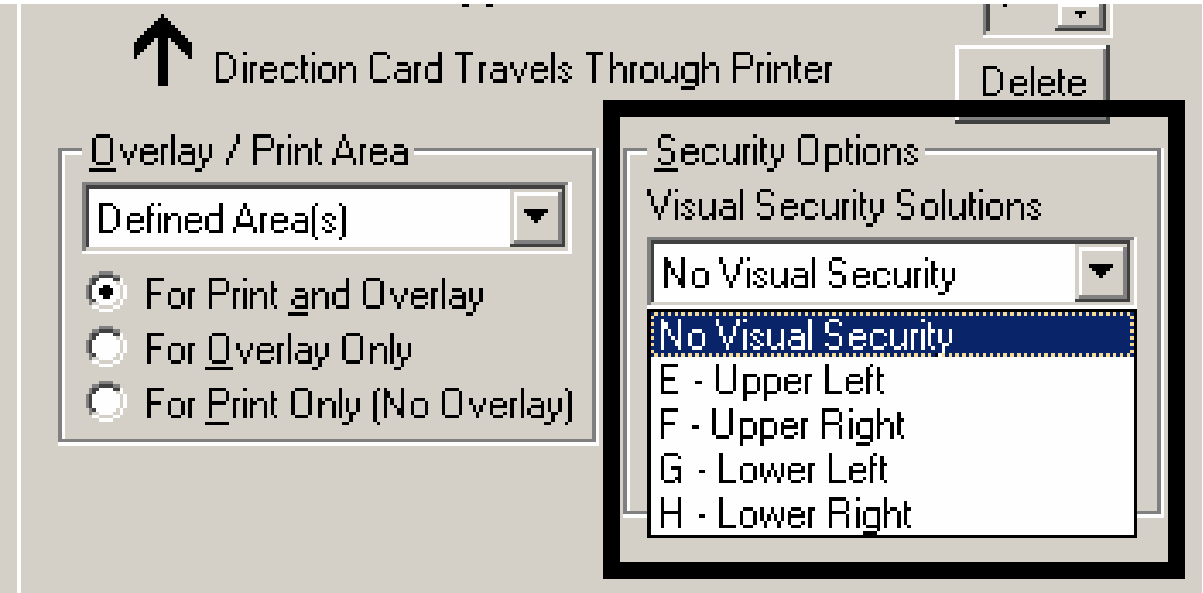
Selecting Orientation - Portfolio under Card tab

Step	Procedure
1	Select the Portrait radio button (below) under Orientation under the Card Size tab to use the Visual Security Solutions (E to H), as shown in this window.



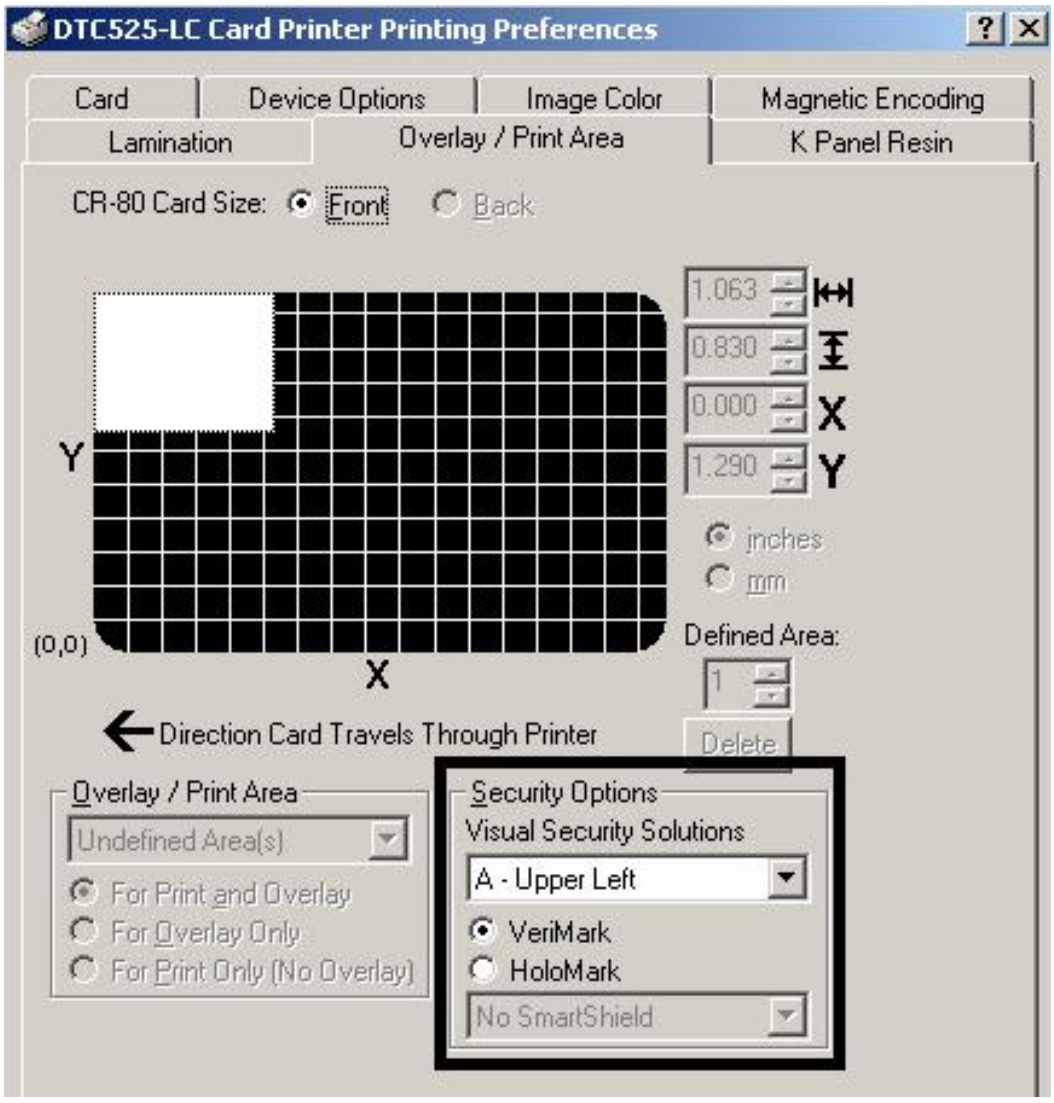
Selecting the Visual Security Solutions dropdown menu (E to H)

Step	Procedure
1	Click on the Visual Security Solutions dropdown menu under the Portrait - Orientation (see above) to use the options shown below.



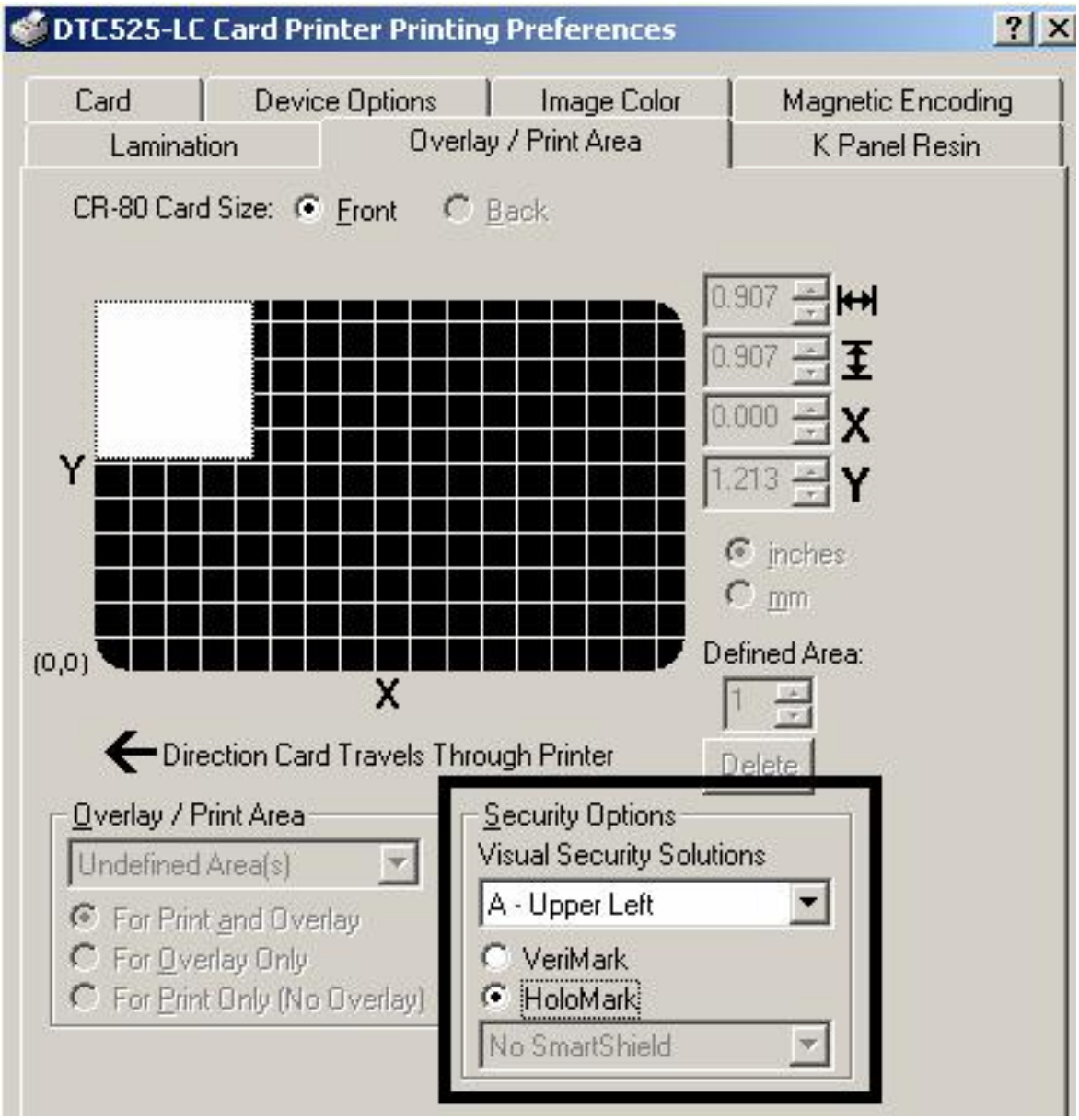
Selecting the VeriMark radio button

Step	Procedure
1	Click on either the **VeriMark** or **HoloMark** radio button, as shown below. The foil options are used to control the size of the exclusion area. (**Note:** When VeriMark is selected a rectangle-sized area is excluded, HoloMark uses a square sized area.)
2	Click on the **VeriMark** radio button (below) for the rectangle-sized area.



Selecting the HoloMark radio button

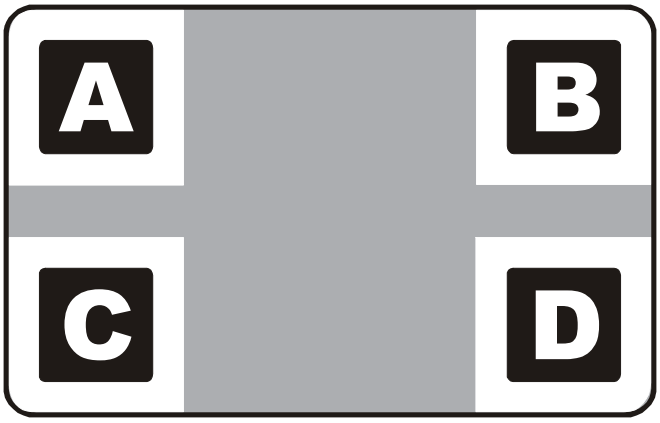
Step	Procedure
1	Click on the **HoloMark** radio button (below) for the squared-area size.



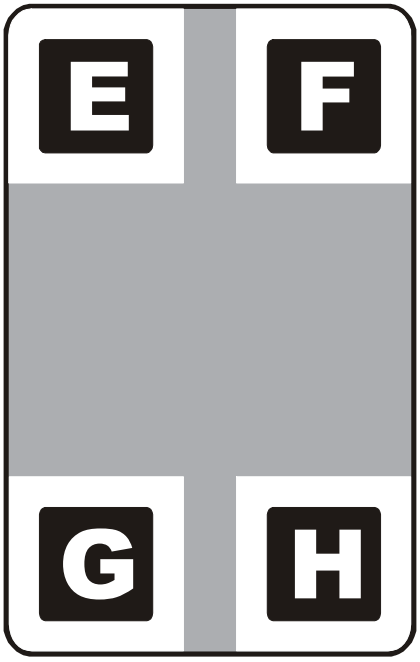
Reviewing the Custom VeriMark Card

The custom VeriMark image is stamped on blank, standard-sized cards. You can select one of eight positions (A to H), as shown in the Portrait and Landscape samples below.

Sample 1: VeriMark Card (Landscape - Orientation) - 4 positions (below)



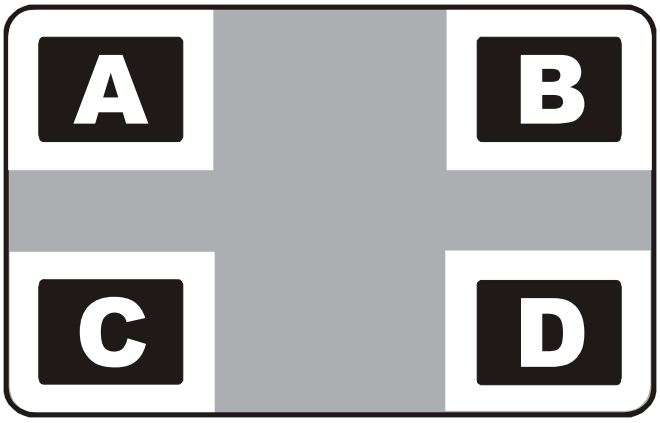
Sample 2: VeriMark Card (Portrait - Orientation) - 4 positions (below)



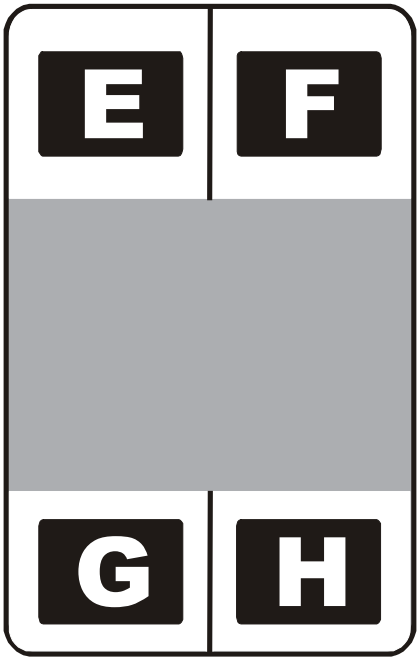
Reviewing the Custom HoloMark Card

The custom HoloMark image is stamped on blank, standard-sized cards. You can select one of eight positions (A to H), as shown in the Portrait and Landscape samples below.

Sample 1: HoloMark Card (Landscape - Orientation) - 4 positions (below)



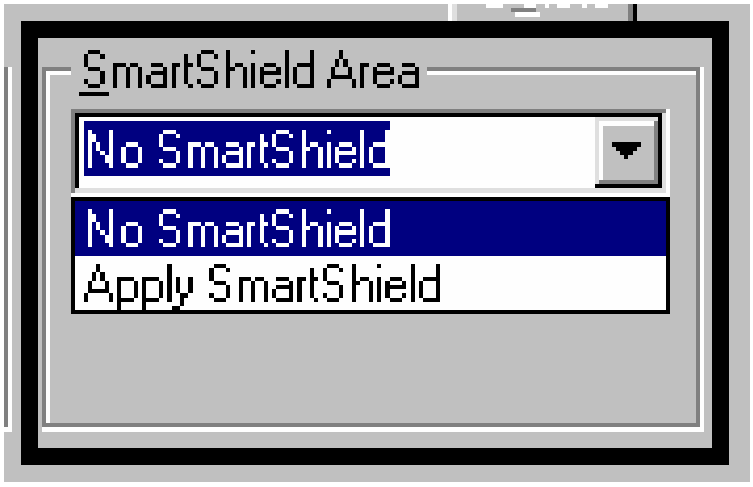
Sample 2: HoloMark Card (Portrait - Orientation) - 4 positions (below)



Using SmartShield Area dropdown menu

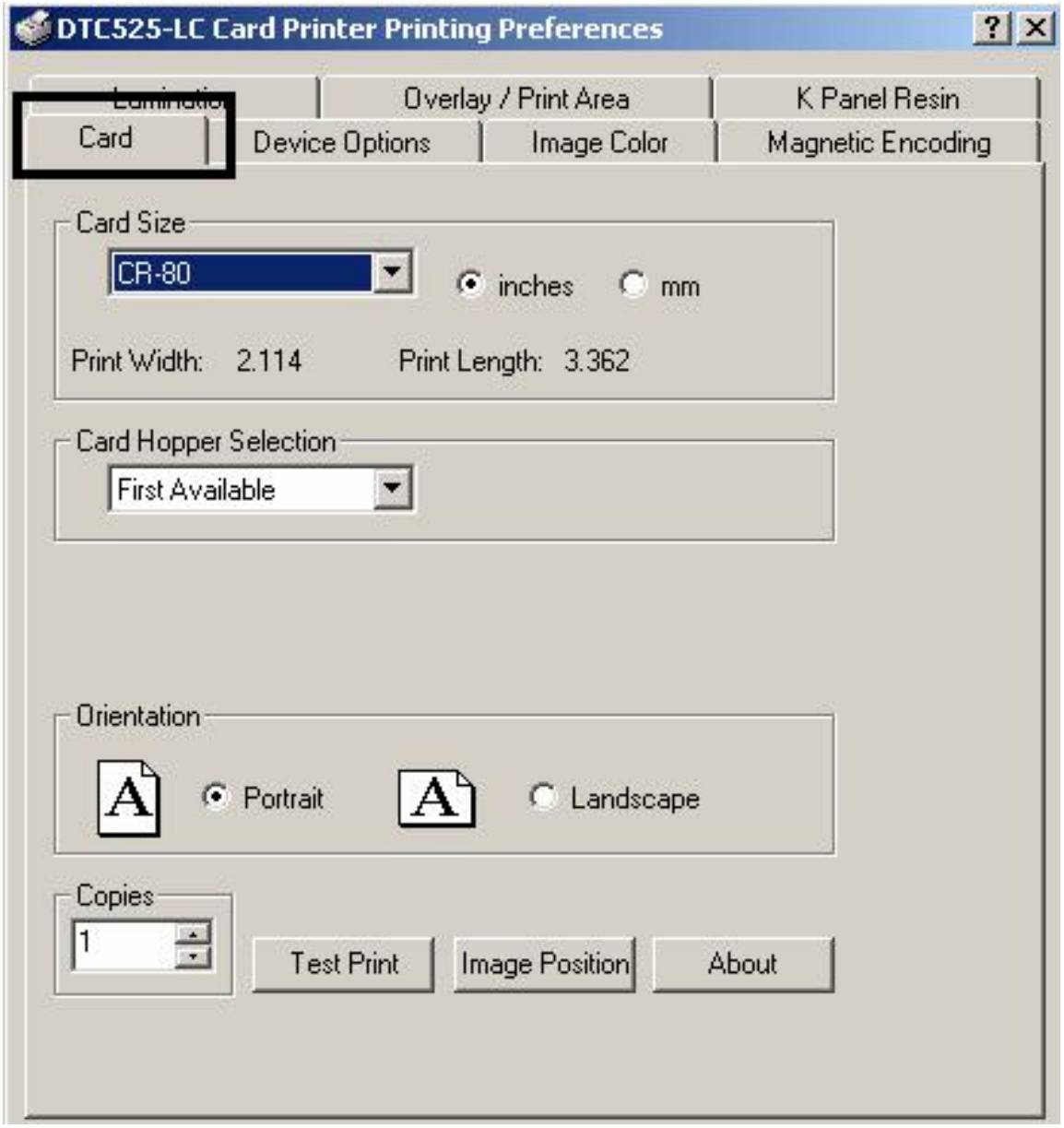
Use the SmartShield Area options, which apply only if using the Printer's optional SmartGuard Security Feature and the SmartShield option is enabled.

Step	Procedure
1	Select the **Apply SmartShield** option to print the custom SmartShield Security Image (a) if using the Printer's optional SmartGuard Security Feature and (b) if the SmartShield option is enabled. (**Note:** Use the **Front** and **Back** options at the top of this tab to designate the side or sides of the card to print the SmartShield image.) **OR** Select **No SmartShield** (a) if not using the SmartShield option or (b) if not printing the SmartShield image (even if it is encoded on the SmartGuard Access Card). (**Note #1:** This is a convenient way of turning the SmartShield Security Feature ON or OFF.) (**Note #2:** It is not possible to apply an overlay and a SmartShield image to the same side of a card.



Using the Card tab

Use this option to control specific Printer functions.



Selecting the Card Size

Select either the **CR-80** or **CR-79** for the appropriate card size option from the two (2) standard card sizes.

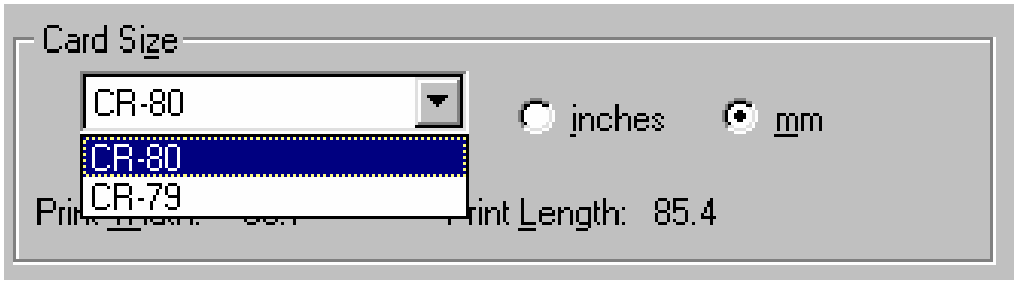
- When designing a card format, always set the card size or page size within the card design program to the exact Print Length and Width dimensions listed in the Printer driver.
- The dimensions of the total print area for each card size will appear in the Print Width and Print Length boxes.

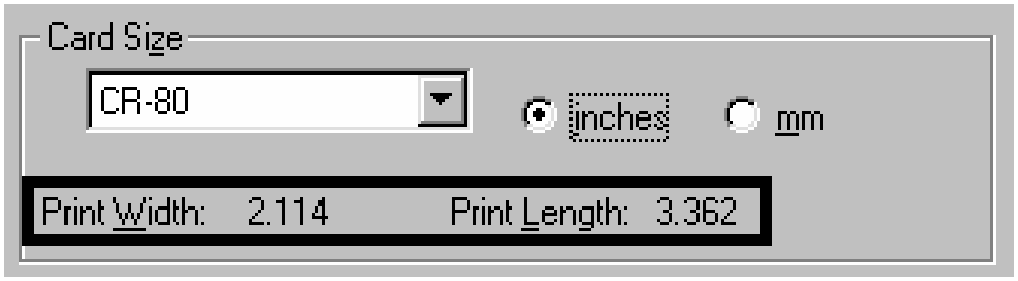
Step	Procedure
1	Select **CR-80** to print onto standard "credit card" sized cards. **OR** Select **CR-79** to print onto slightly smaller CR-79 sized cards (3.303” L x 2.051W/83.9mm L x 52.1mm W). • The CR-79 card adhesive-backed card is used in applications where they are printed and applied to thicker proximity cards. • Make a simple card size adjustment to the Printer's Card Thickness Adjustment Lever if printing with CR-79 sized cards to decrease the accepted card thickness.
2	Select either the **inches** or **mm** radio button (as needed).

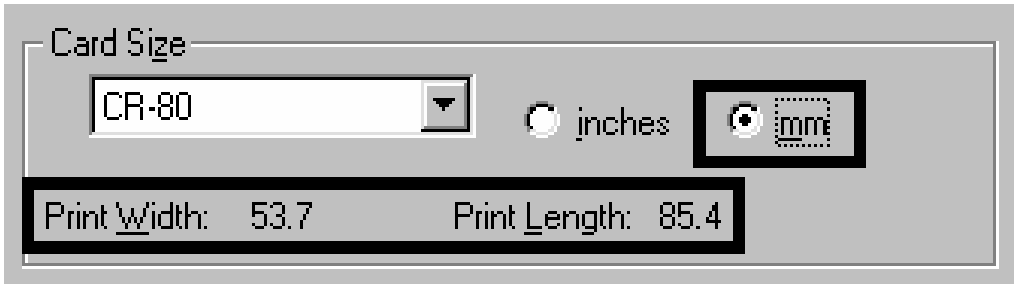
Continued on the next page

Selecting the Card Size (continued)

See the previous procedure in this section.







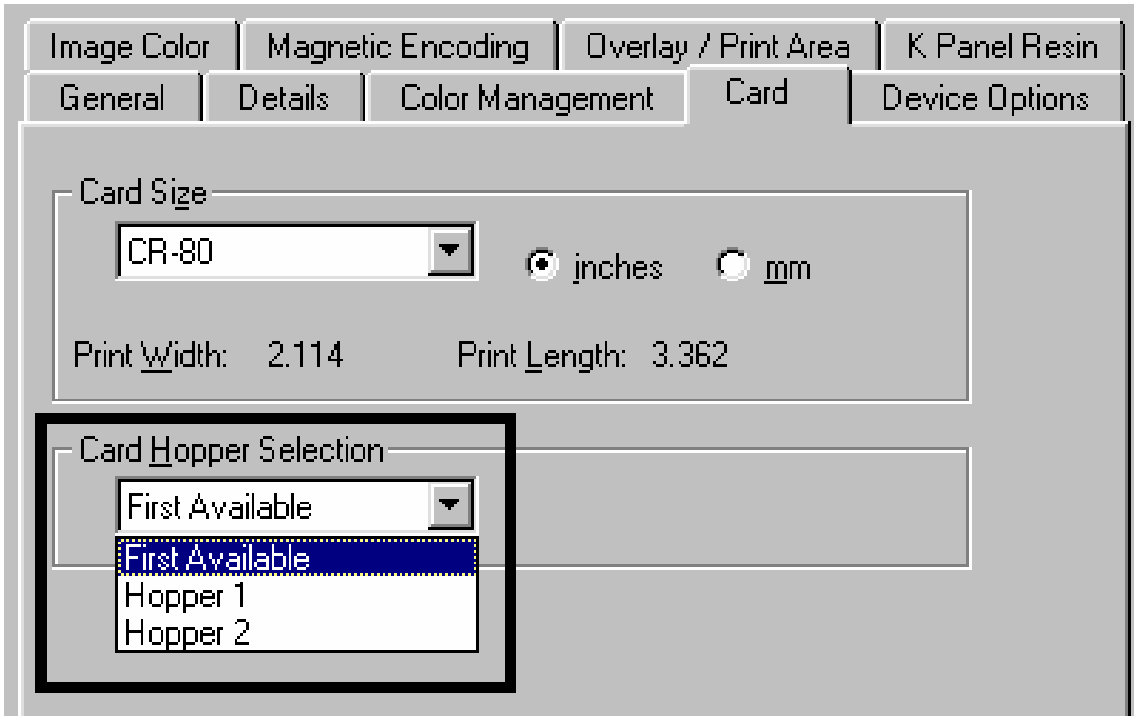
Using the Card Hopper Selection (DTC515/DTC525 only) option

This option only applies if using the **DTC515** or **DTC525** Card Printer models that provide a dual-stack, 200-card capacity Card Input Hopper. **(Note**: The Printer driver always overrides the LCD-based hopper selection. For example, the Printer will print from Hopper 2 even if Hopper 1 (H-1) is selected on the LCD. This is because the print job was sent with Hopper 2 (selected from the Printer driver).)

Steps	Procedure
1	Select **First Available** for these purposes: • To print from the hopper currently selected as indicated on the Printer's LCD. • To automatically switch (via the Printer) to the other hopper once the current hopper runs out of cards. (**Note:** In most cases, this option is used when both hoppers are loaded with the same type of cards such as in higher volume batch printing applications.) • To manually designate the hopper just prior to each specific print job by pressing the **H-1** or **H-2** softkey buttons. **OR** Select **Hopper 1** to print only from Hopper 1. • Select this option and the hopper will not automatically switch to the other hopper when running out of cards in Hopper 1. • Use this option when two different types of cards are loaded separately into each hopper in order to print onto only one of those specific cards (e.g., Mag stripe cards in Hopper 1 versus non stripe cards in Hopper 2). **OR** Select **Hopper 2** to print only from Hopper 2 in this same fashion.

Using the Card Hopper Selection (DTC515/DTC525 only) option (cont.)

See the previous procedure in this section.



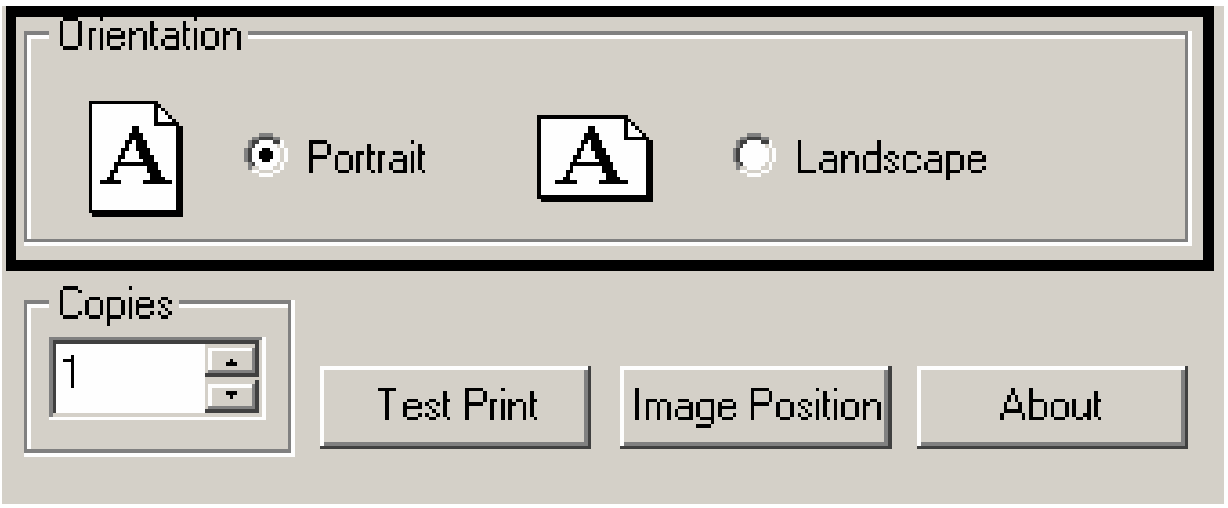
Using the Card Hopper Selection (DTC515/DTC525 only) option (continued)

See the previous procedure in this section.

Reviewing the Orientation

Select either the **Portrait** or **Landscape** radio buttons for Orientation. (**Note:** An icon illustrating a printed card helps represent the difference between the two.)

Step	Procedure
1	Select **Portrait** to cause the card to print in a vertical orientation. **OR** Select **Landscape** to cause the card to print in a horizontal orientation, as shown on the below.



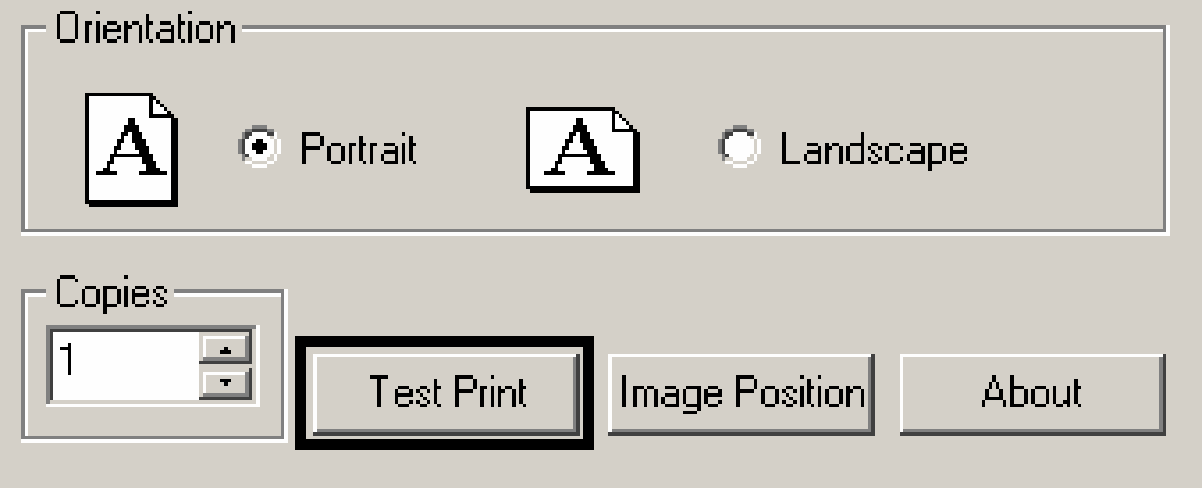
Specifying the Copies

Specifies the number of copies to be printed, as shown above.

Using the Test Print button

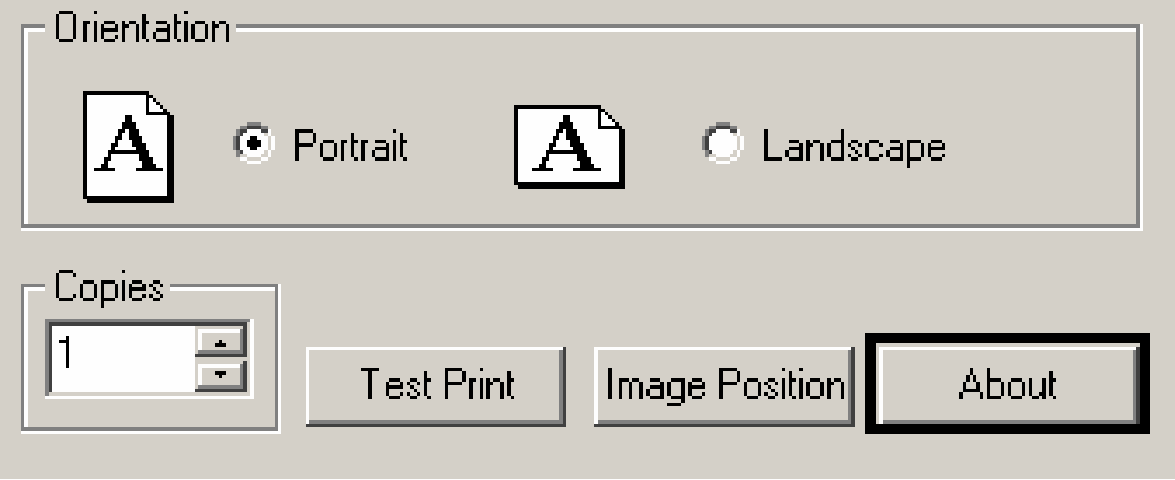
Use this button to send a Self-Test print to the Printer.

- **Ribbon Requirement:** A Full-Color YMCKO print Ribbon is required for a DTC510/DTC515 or YMCKOK print Ribbon is required for a DTC520/DTC525.
- **Test Print Procedure:** This test print procedure can be helpful in ensuring (a) that the computer is effectively communicating with the Printer and (b) that the Printer is functioning properly.



Clicking on the About button

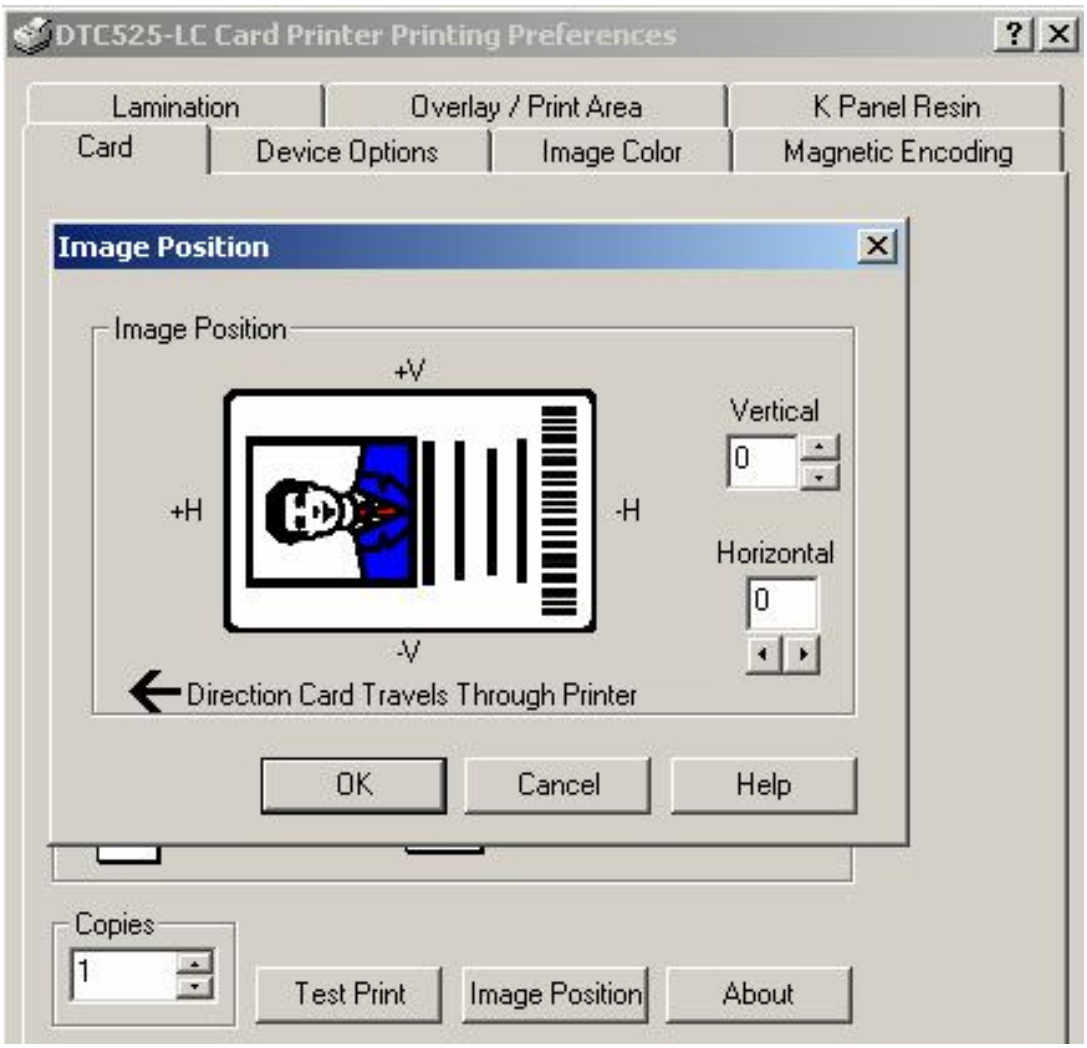
Click this **About** button to open a dialog containing the copyright and version information about this Printer driver software.



Using the Image Position button

Use the **Image Position** controls to adjust the position of the overall print area to be precisely centered on a card.

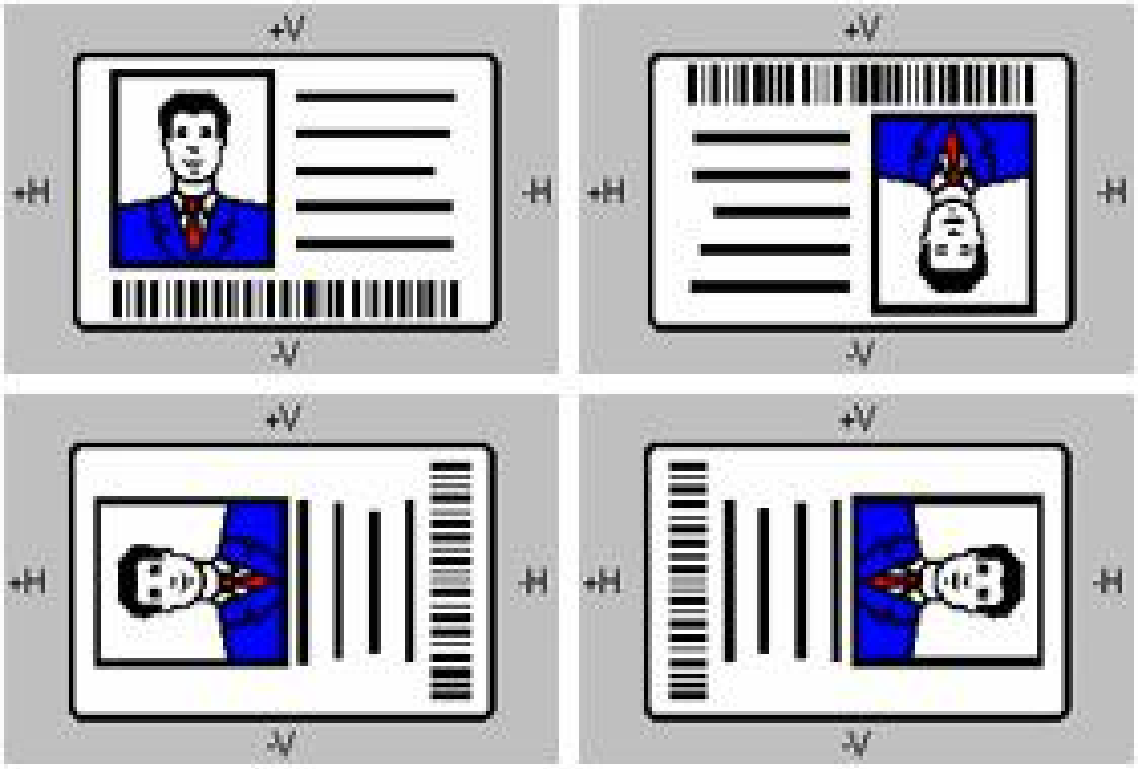
Step	Procedure
1	Adjust the Image Position values by clicking on the Vertical and Horizontal adjustment arrows, as shown below.



Using the Image Position button (continued)

When adjusting these values, keep in mind that cards always remain in the same position as they travel through the Printer, regardless of image orientation.

To illustrate this, the card illustration shown in the Image Position box will flip and rotate according to whether you have selected the **Portrait** or **Landscape** radio buttons. However, the outline around the illustration will always remain in the same landscape orientation.

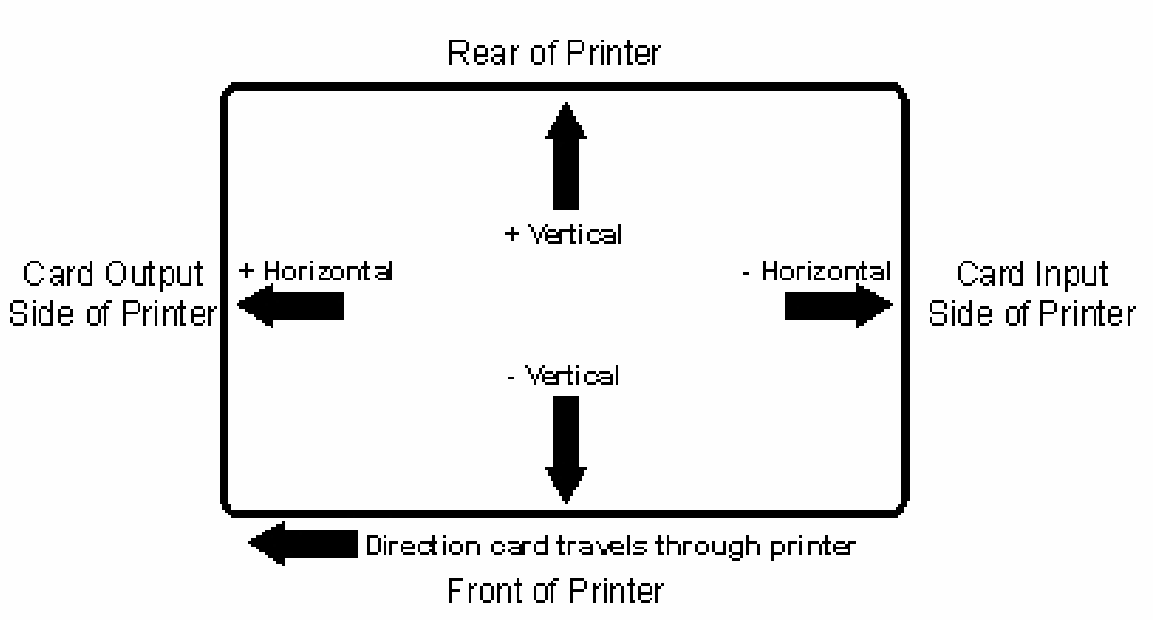


Using the Image Position button (continued)

The following diagram represents how the printed image will move in relation to the fixed card position as positive and negative image placement values are entered.

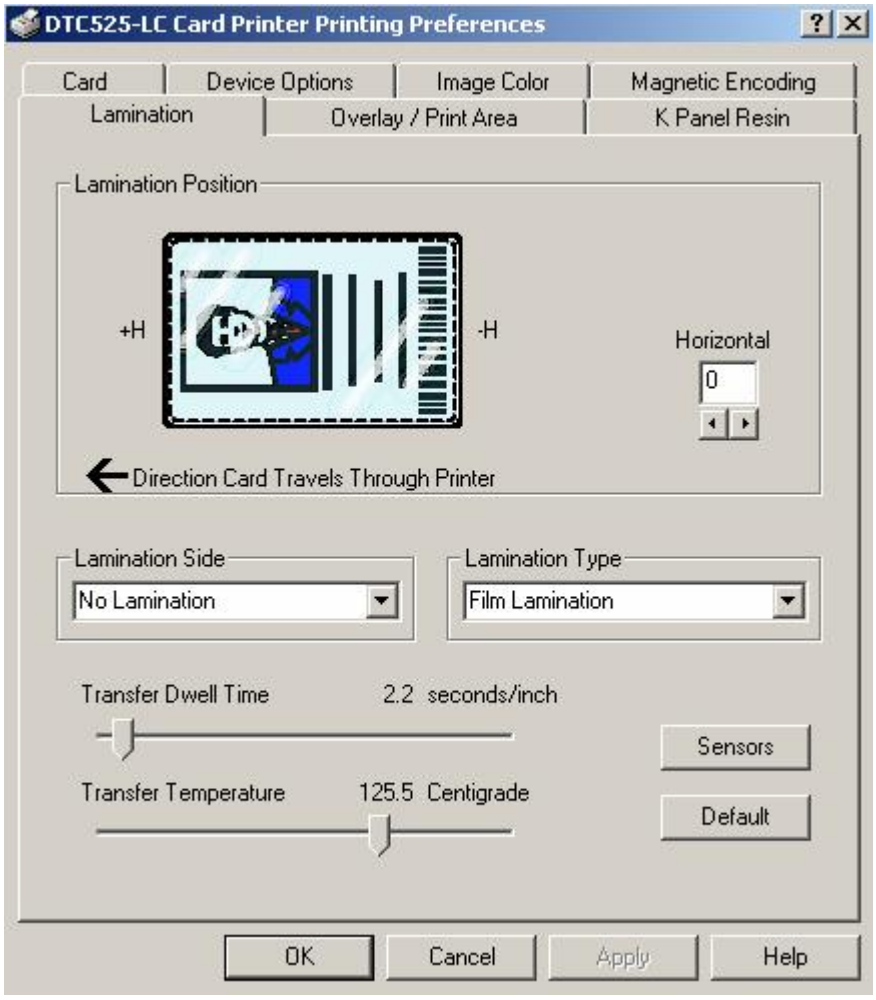
- Use the **Vertical** adjustment to move the image more toward the rear of the Printer (if a positive number is entered) and more toward the front of the Printer (if a negative number is entered).
- Use the **Horizontal** adjustment to move the image more toward the card output side of the Printer (if a positive number is entered) and more toward the card input side of the Printer (if a negative number is entered).

(**Note:** The maximum value for the Vertical and Horizontal adjustments is ±100 pixels (10 pixels =.0333"/.847mm).)



Using the Lamination tab (only with Card Lamination Module)

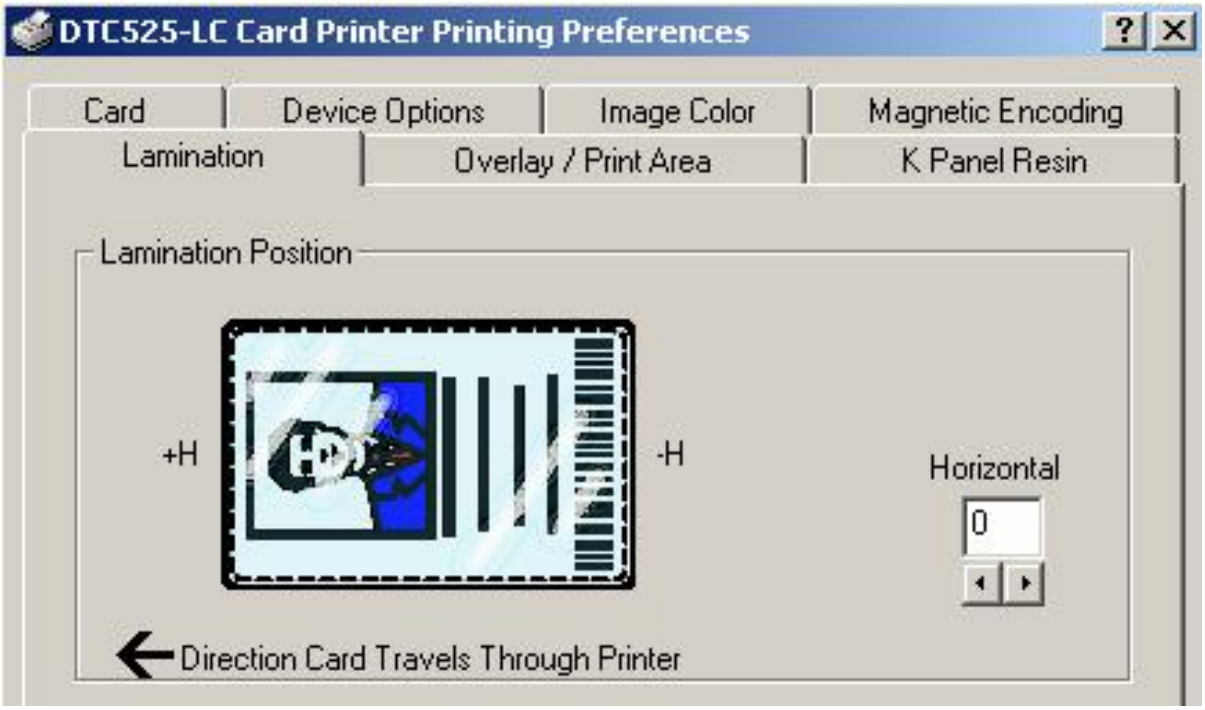
Use this option to control specific Printer functions. The Lamination Tab appears only if the Printer is equipped with the Card Lamination Module. These options allow you to control the Printer's lamination process.



Selecting the Lamination Position

Step	Procedure
1	The Lamination Position control allows you to adjust the horizontal position of the PolyGuard overlaminate. This control functions in the exact same fashion as the Image Position controls, except only the horizontal position of the overlaminate requires adjustment. • To adjust the lamination position, click on the Horizontal adjustment arrows. • To move the overlaminate more toward the Card output side of the Printer, enter a positive number. • To move the overlaminate more toward the card input side of the Printer, enter a negative number. (**Note:** The adjustment arrows point in the direction the patch will move on the card. The maximum value for the Horizontal adjustment is ±100 pixels (10 pixels = about .03"/.8mm).) • To adjust the Vertical placement of the PolyGuard overlaminate, see the Loading the Overlaminate procedure in Section 3, page 134.

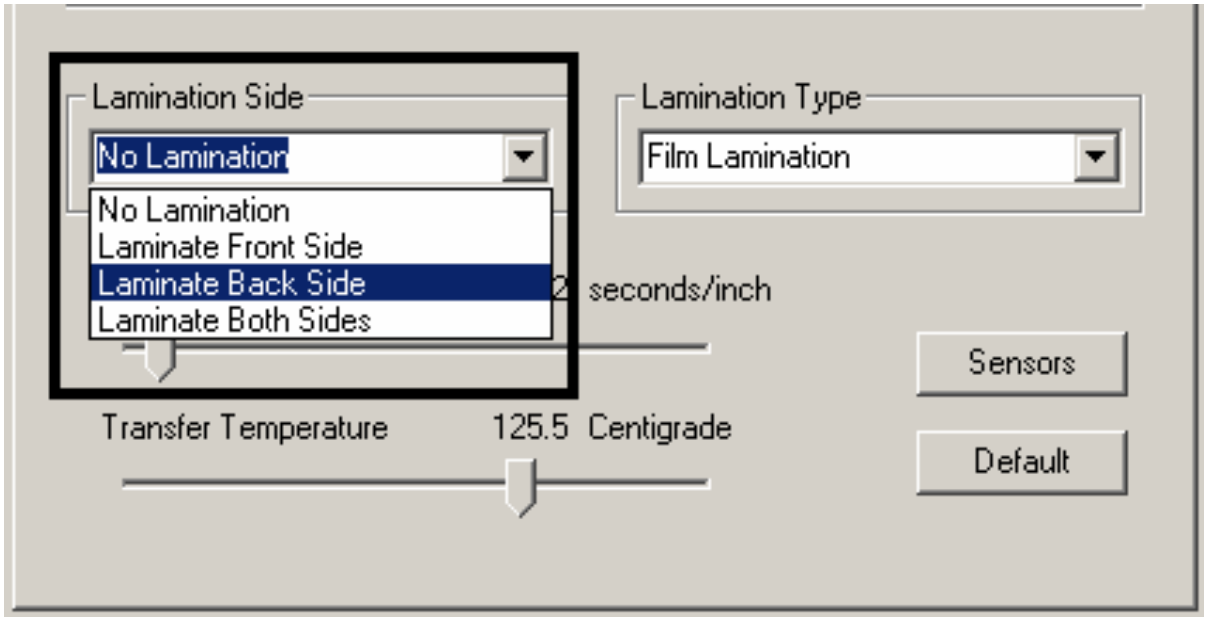
Continued on the next page



Selecting the Lamination Side

Step	Procedure
1	a. Select the **No Lamination** option if you do not want to use the Printer's built-in laminator. b. Select Laminate Front Side, Laminate Back Side or Laminate Both Sides to specify the side(s) of the card to laminate.

Continued on the next page

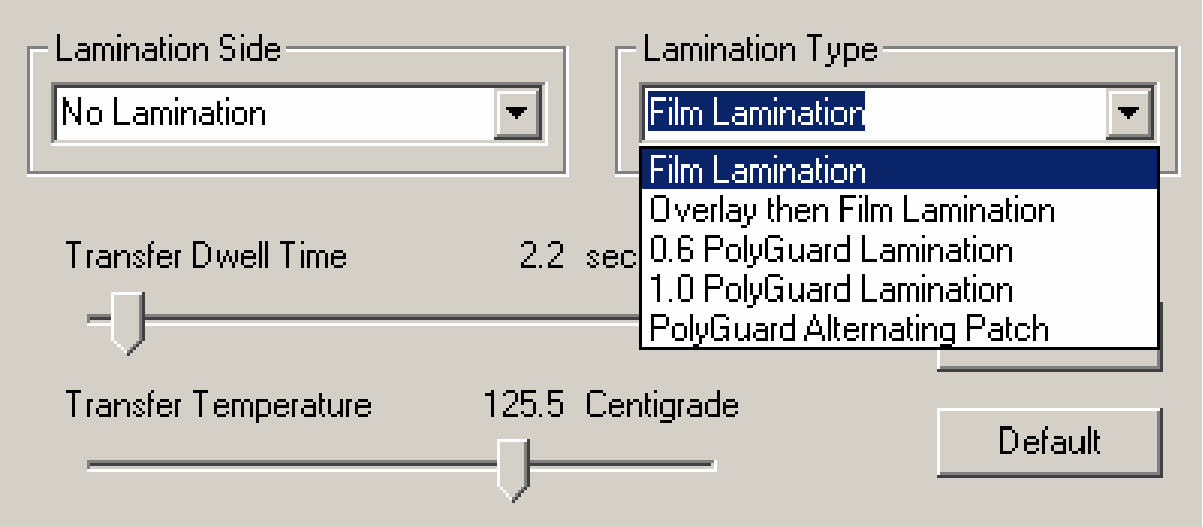


Selecting the Lamination Type

Select one of the **Lamination Type** options, according to which type of lamination media is currently installed. Two types of overlaminates are supported by the driver: Film Lamination and PolyGuard lamination. Custom versions of each type are also available.

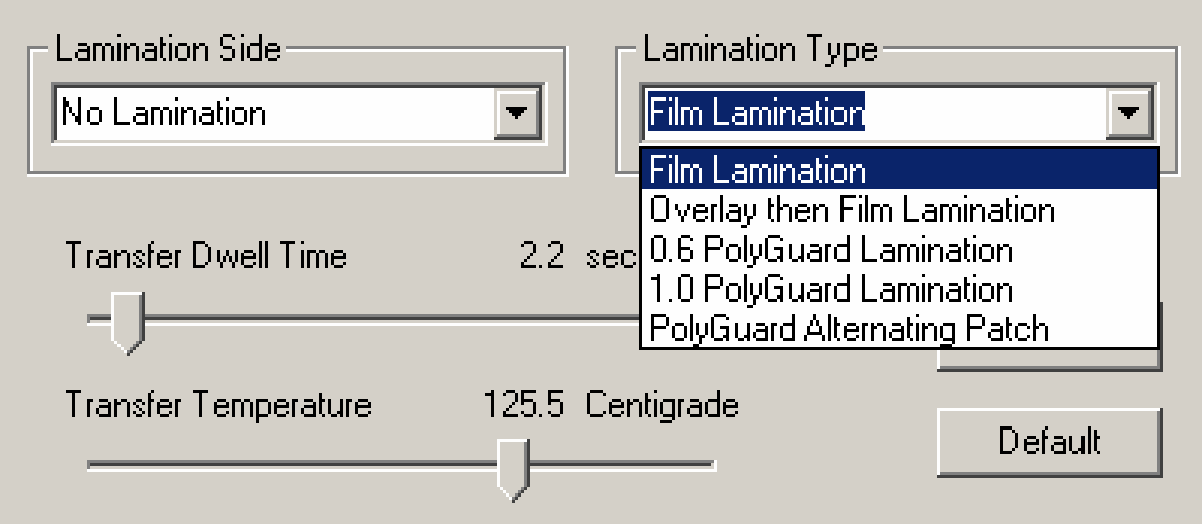
Step	Procedure
1A	Select the **Film Lamination** option if the Thermal Transfer Film Overlaminate type is installed in the Lamination Module. • The Film Lamination may be applied with or without the application of an additional overlay from a paneled, full-color print Ribbon. • The Overlay (O) Panel provides additional Ultra-Violet (UV) light protection and additional abrasion resistance not found when using film laminations alone; however, it requires use of a print Ribbon with an Overlay (O) Panel. • If using Film lamination, the additional protection of the print Ribbon's overlay panel is recommended. • If the **Film Lamination** option is selected, the film lamination is applied to the printed card, then the card is ejected. (**Note:** This is the fastest way to apply the film lamination, yet it provides the lowest film durability.)

Continued on the next page



Selecting the Lamination Type

Step	Procedure
1B	Select the **Overlay then Film Lamination** option when using a Ribbon which provides a clear overlay panel. The Ribbon types which do not provide an overlay panel or support overlay printing are the resin-only Ribbons and the Full-Color YMC, YMCK and YMCKK Ribbons. **OR** Select the **0.6 PolyGuard Lamination** option or **1.0 PolyGuard Lamination** option for either patch thickness. (**Note:** These both offer equivalent protection but require different heat settings and lamination speeds. • Select the appropriate option according to the thickness of the PolyGuard material you are using.) • Select the PolyGuard Alternating Patch option only if using PolyGuard material that has alternating patch configurations on the same roll (e.g., full patch on the front of the card and half patch on the back). **Caution:** with any of these PolyGuard options, do not apply the Ribbon overlay (O) when laminating with PolyGuard. **OR** Select the **PolyGuard Alternating Patch** option only if using PolyGuard material that has alternating patch configurations on the same roll (e.g., full patch on the front of the card and half patch on the back).

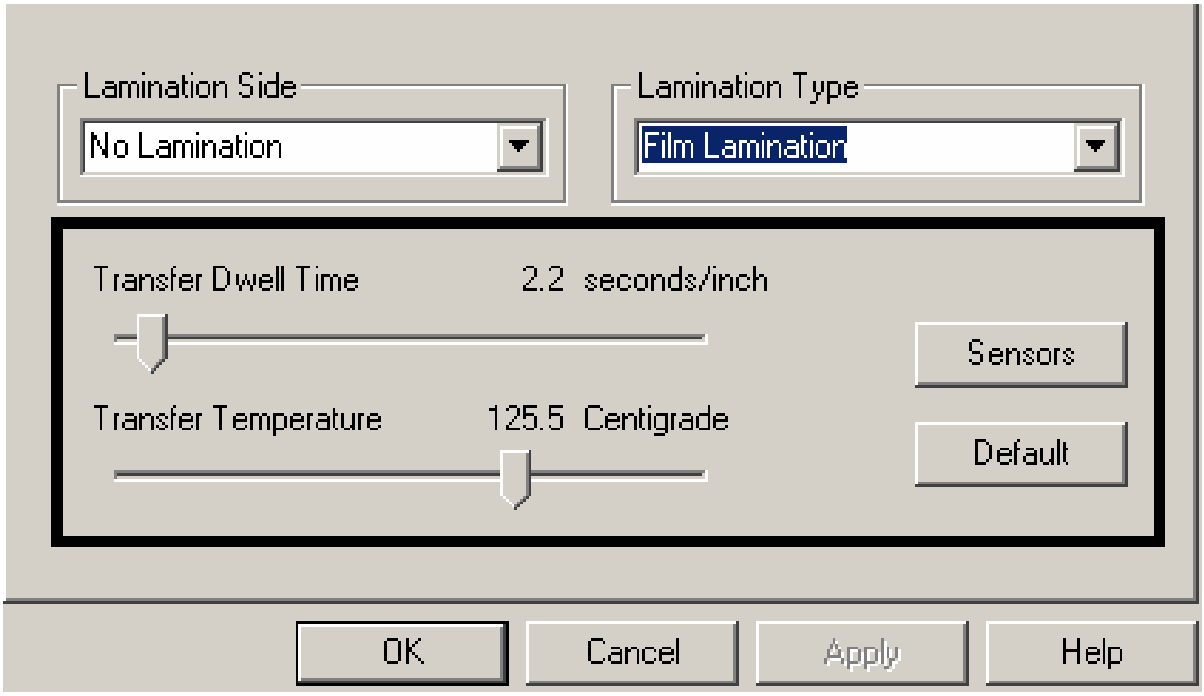


Adjusting the Transfer Dwell Time and Transfer Temperature

Step	Procedure
1	Adjust the Transfer Dwell Time and the Transfer Temperature to control the Lamination Dwell Time or through-put speed of a card in seconds/inch and the Lamination Temperature.

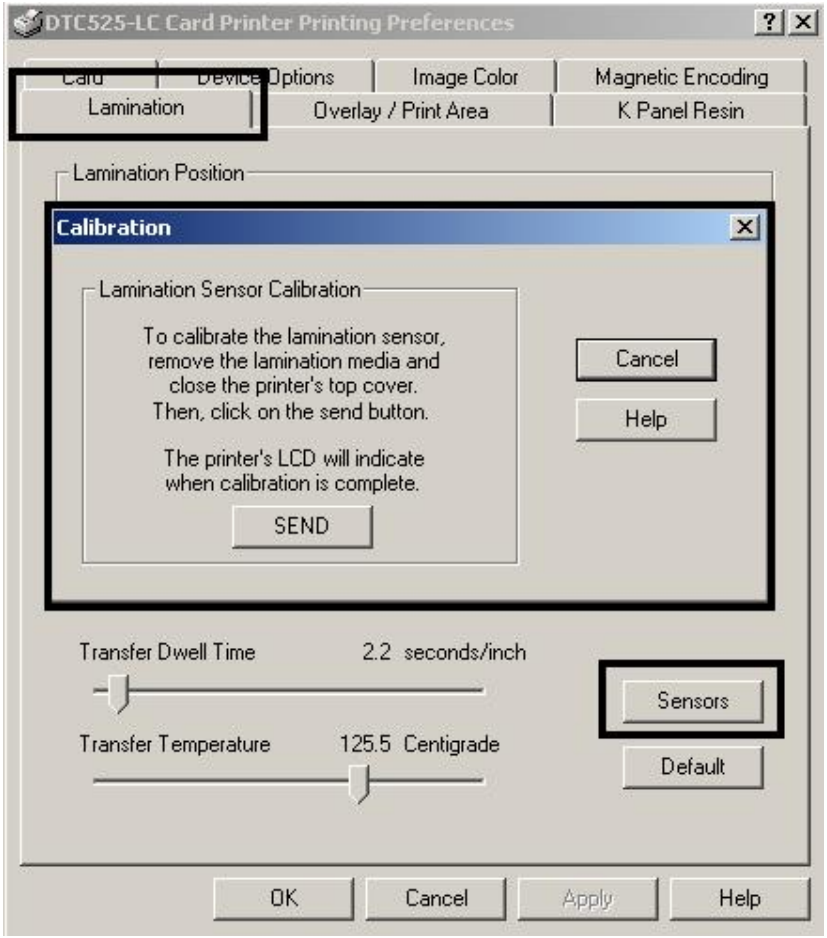
Selecting the Sensors button and Defaults button

Step	Procedure
1	Select the **Sensors** button to bring up a separate dialog to calibrate the Lamination Sensor. See the next page.
2	Adjust the Default settings as needed when using other types of cards. (**Note:** The Default settings for the Lamination Dwell Time and Temperature are preset for factory-recommended card stocks and overlaminate types.)



Calibrating the Card Lamination Module's Lamination Sensor

Step	Procedure
1	Select the Lamination Tab's **Sensors** button to display options for calibrating the Card Lamination Module's Lamination Sensor. The Lamination Sensor is what detects the start of each PolyGuard patch throughout the roll. This Sensor may occasionally need to be recalibrated. • If the lamination module seems to skip PolyGuard patches or wind the PolyGuard roll until the lamination module's LED flashes, recalibrate the Lamination Sensor according to the instructions given the in the Calibration window. • Be sure the Printer is powered ON and that the lamination module's Top Cover and Lamination Station are closed when calibrating. (**Note:** This Sensor is not used if applying Thermal Transfer Film overlaminate.)



Section 5: Cleaning

This Section deals with the Printer's internal and external maintenance in regards to the unit's cleaning and general upkeep. (**Note:** The Printer should be cleaned on a regular basis to insure that the Printer consistently produces high quality output.)

Danger: Be sure to disconnect the Printer's power cord whenever performing any type of maintenance procedure unless otherwise directed.

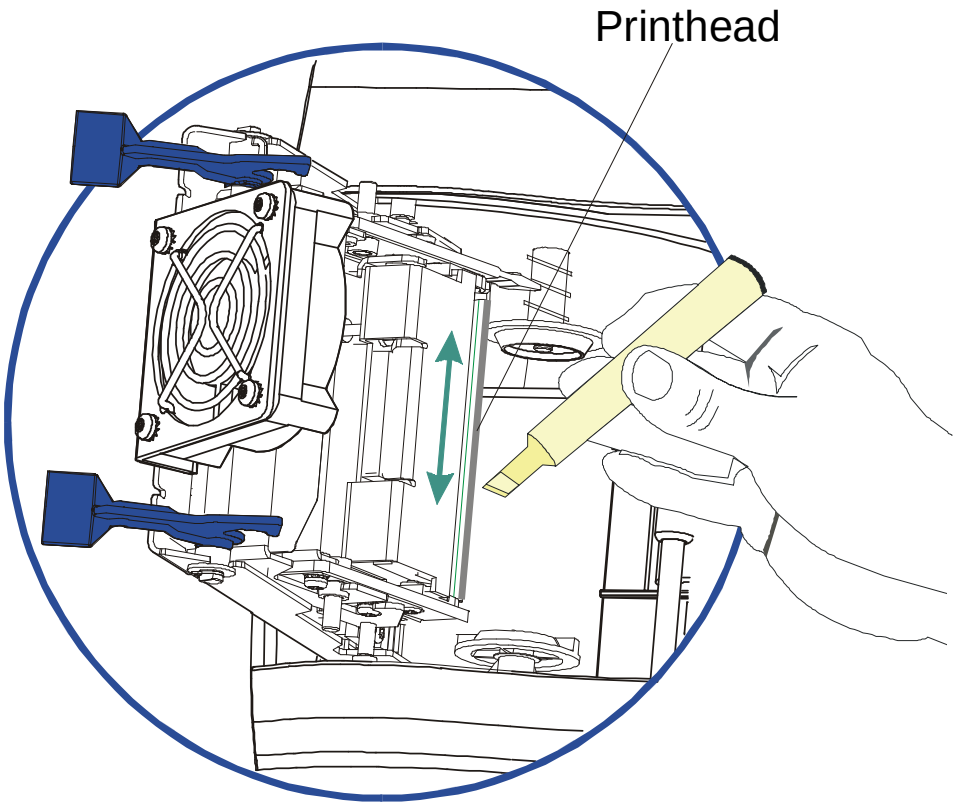
Safety Messages (review carefully)

Symbol	Critical Instructions for Safety purposes
Danger:	**Failure to follow these installation guidelines can result in death or serious injury.** Information that raises potential safety issues is indicated by a warning symbol (as shown to the below). • **To prevent personal injury**, refer to the following safety messages before performing an operation preceded by this symbol. • **To prevent personal injury**, always remove the power cord prior to performing repair procedures, unless otherwise specified. • **To prevent personal injury**, make sure only qualified personnel perform these procedures.
Caution:	**This device is electrostatically sensitive**. **It can be damaged if exposed to static electricity discharges.** Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below). • **To prevent equipment or media damage**, refer to the following safety messages before performing an operation preceded by this symbol. • **To prevent equipment or media damage**, observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the Circuit Board and Printhead Assemblies. • **To prevent equipment or media damage**, always wear an appropriate personal grounding device (e.g., a high quality wrist strap grounded to avoid potential damage). • **To prevent equipment or media damage**, always remove the Ribbon and Cards from the Printer before making any repairs, unless otherwise specified. • **To prevent equipment or media damage**, take jewelry off of fingers and hands, as well as thoroughly clean hands to remove oil and debris before working on the Printer.

Cleaning the Printhead (850102)

Caution: Perform this procedure during every Ribbon change or after every **1,000 prints** to maintain consistent print quality. Perform this procedure for streaks on the card where the color was not transferred correctly.

Steps	Procedure
1	Open the Printer's Top Cover and Print Station.
2	Using a Printhead Cleaning Pen from the Printer Cleaning Kit, firmly wipe back and forth across the surface of the Printhead.
3	Once the Printhead is completely dry, close the Printer.
4	If a streak persists, see the Replacing the Printhead Assembly (850102) procedure in Section 5, page **Error! Bookmark not defined.**.



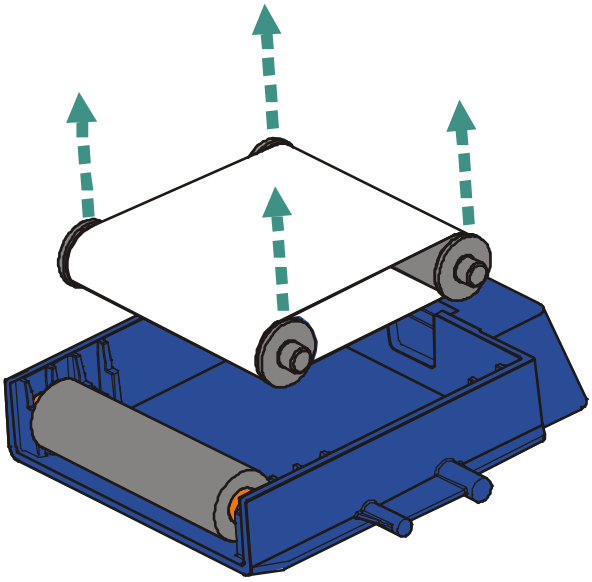
Replacing the Card Cleaning Tape

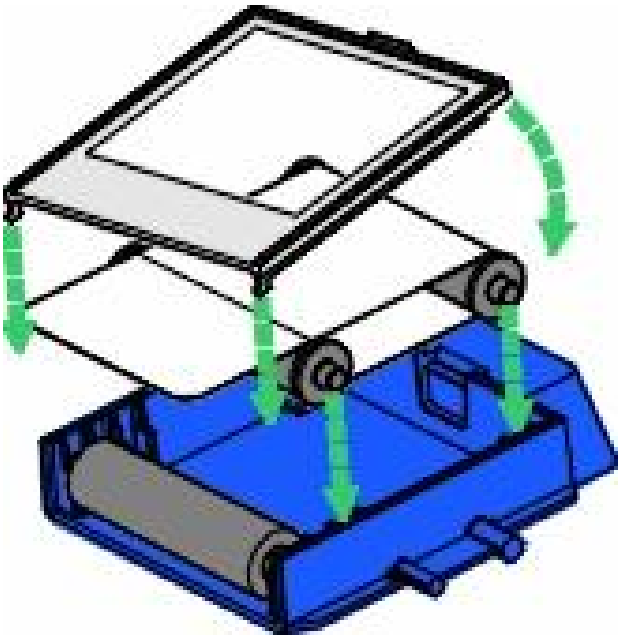
Caution: Replace the Card Cleaning Tape approximately every **2,000 to 3,000 prints**, depending on the cleanliness of the card stock or the environment in which the Printer is located.

Steps	Procedure
1	Open the Printer's Top Cover.
2	Pull the Cleaning Cartridge out of the Printer.
3	Open the Cleaning Cartridge by pressing on the release tab of the clear Cleaning Cartridge Cover and pulling the cover up.
4	Pull up on the used cleaning tape and lift it and the two Tape Rollers out of the Cartridge. (**Note:** The Cleaning Roller can stay within the Cartridge.)
5	Insert the two Tape Rollers into the new Cleaning Tape loop.
6	Place the Tape Rollers and the new tape back into the cartridge by (a) placing the Roller (closest to the cartridge's handle) and (b) pressing the second Roller into place. **Caution:** Be sure to orient the new tape loop so that it extends over the Cleaning Roller once it is installed. See the next page.
7	a. Set the clear Cleaning Cartridge Cover back into place. **Caution:** Be sure the tabs on the cover are seated properly into the slots on the cartridge as shown below. b. When in place, press down on the top of the cover until it snaps shut.
8	Pull on the tape loop's tab to remove the backing from the tape.
9	Insert the Cleaning Cartridge back into the Printer. **Caution:** Be sure to push down on the cartridge until it clicks into place. If the cartridge is not inserted properly, the Printer will not feed cards.

Replacing the Card Cleaning Tape (continued)

See the previous procedure in this section.





Cleaning the Platen and Card Feed Rollers

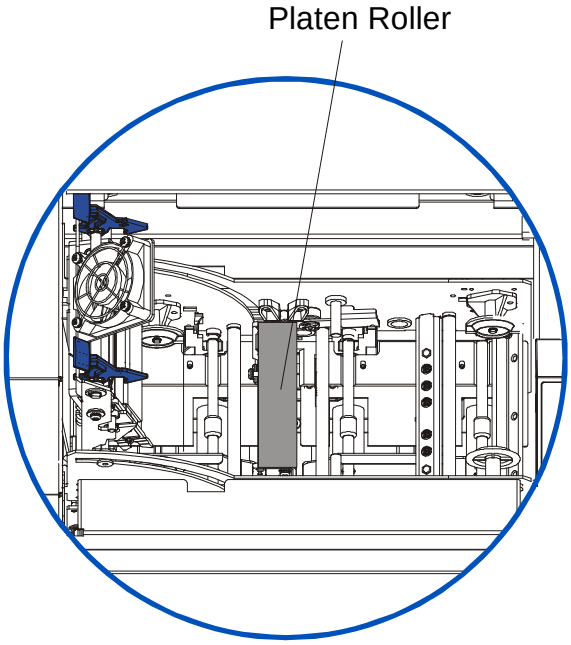
Caution: Clean the black, rubber Platen Roller and all of the gray (or black), rubber Card Feed Rollers within the Printer approximately every **2,000-3,000 prints**, depending on the cleanliness of the card stock or the environment in which the Printer is located. Clean if the Rollers appear dirty to prevent card jams and maintain the best print quality.

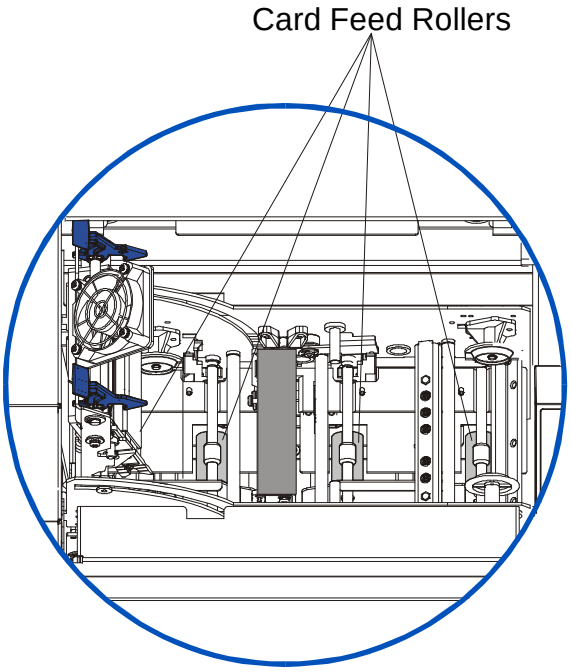
with the Printer power ON, use the following steps to clean the Rollers:

Steps	Procedure
1	Open the Printer's Top Cover and Print Station. **Caution:** Do not remove blank cards, print Ribbon or the Card Cleaning Cartridge from the Printer for this procedure.
2	Get a Cleaning Card from the Printer Cleaning Kit and remove its adhesive backing paper.
3	with the Card Hopper Door closed, insert the Cleaning Card into the Exception Card Slot until the card stops. **Caution:** Be sure to insert the card so that the longest end of the card is inserted first with the sticky side facing down.
4	Press the Printer's **FORWARD** softkey button several times to feed the Cleaning Card all the way through the Printer.
5	a. Repeat this cleaning procedure if additional cleaning is necessary. b. Once the Rollers are clean, close the Print Station and Top Cover.

Cleaning the Platen and Card Feed Rollers (continued)

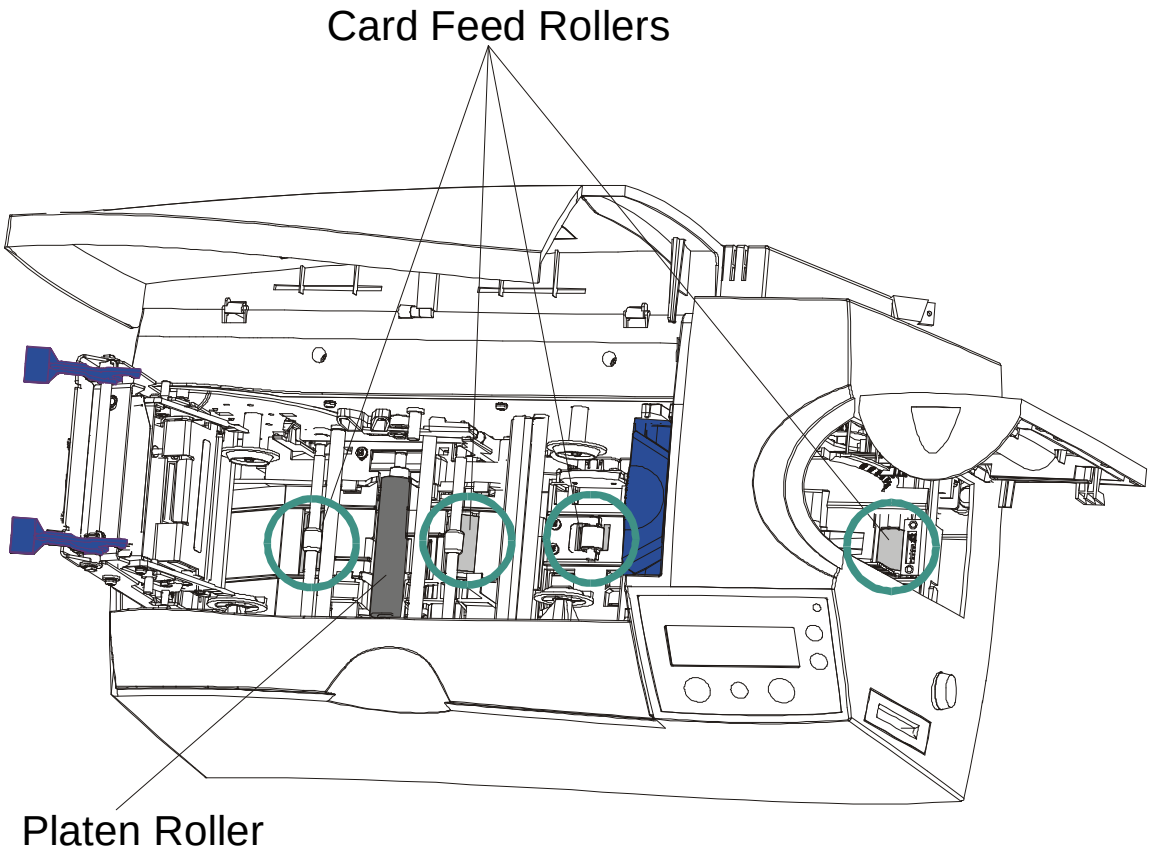
See the previous procedure in this section.





Cleaning the Platen and Card Feed Rollers (continued)

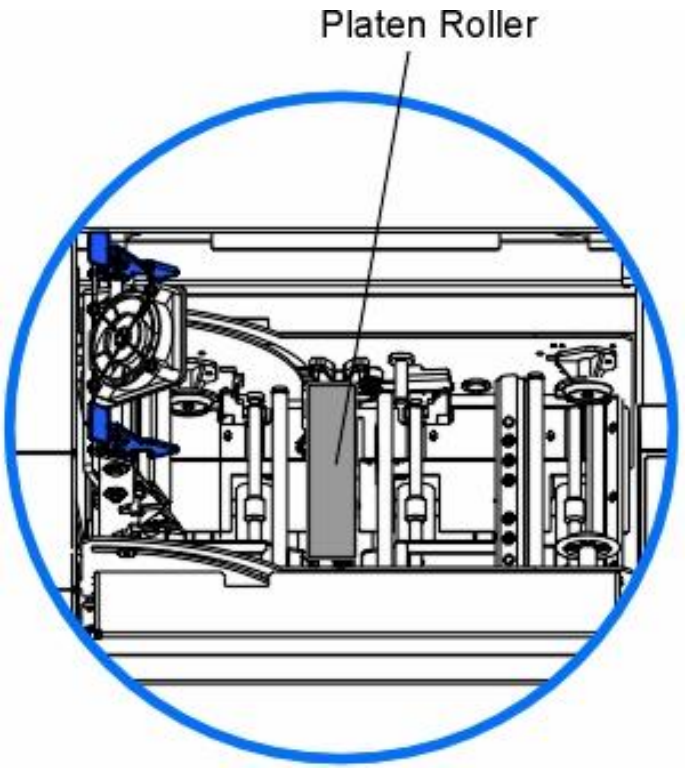
See the previous procedure in this section.



Cleaning the Platen

The Printer's Platen Roller should be cleaned approximately every 250 prints. (**Note:** This helps prevent jams and maintain the best print quality. Perform this procedure if the roller is visibly dirty.)

Steps	Procedure
1	Leave the power ON and open the printer's Top Cover and Print Station.
2	Remove the print ribbon.
3	Locate the Platen Roller.
4	Use a **Cleaning Pad** from the Printer Cleaning Kit to wipe the roller clean. Press the **FORWARD** and **BACK** buttons to move the roller back and forth while cleaning.
5	After the roller is clean and completely dry, replace the printing supplies and close the printer.



Cleaning the Printer's Exterior

The Printer has a durable casing that should retain its luster and appearance for many years. Clean it only with a Cleaning Pad from the Printer Cleaning Kit. (**Note:** See the next section for a photo of Printer's exterior.)

Caution: Do not use cleaning solvents of any kind or spray the cabinet with a cleaner!

Cleaning the Printer's Interior

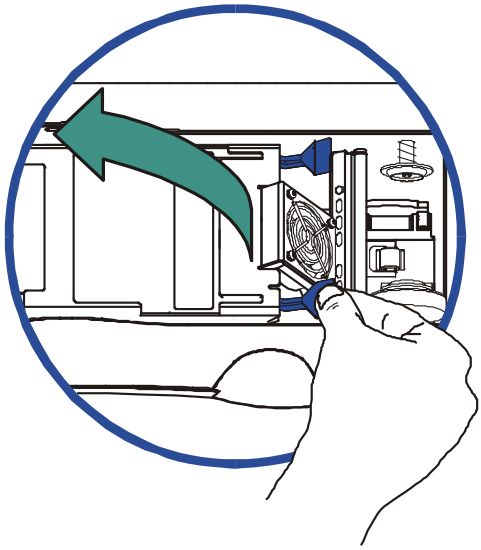
Caution: The Printer, dust and other particles can accumulate inside the Printer. These particles are attracted to the print Ribbon or blank card by static produced during printing and can contaminate the printed card causing spots or speckles to appear.

Periodically, use the following procedure to remove dust and other contaminants:

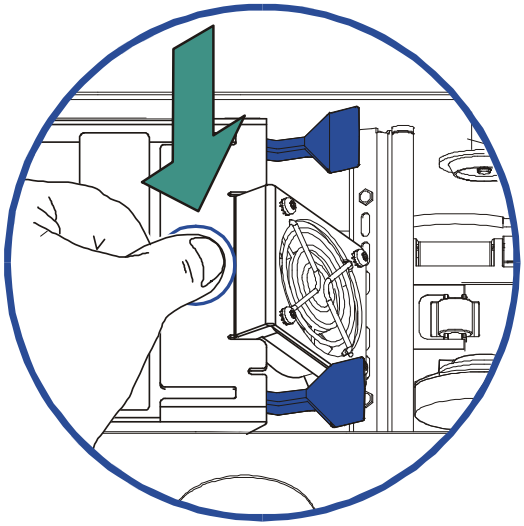
Steps	Procedure
1	Open the Printer's Top Cover and Print Station. See the next page.
2	Remove the print Ribbon from the Printer.
3	Use a Cleaning Pad from the Printer Cleaning Kit to wipe out all visible areas inside the Printer. Remove any debris within its interior. **Caution:** Be extremely careful not to let any alcohol drip inside the Printer.
4	Re-install the printing supplies and close the Printer. See the next page.

Cleaning the Printer's Interior (continued)

This is a display for the Print Station (opened).



This is a display for the Print Station (closed).



Section 6 Packing the DTC500 Card Printer

The purpose of this section to provide the User with a specific packing procedure for the DTC500 Series Card Printer.

Follow this instruction to pack the card Printer for transport.

Step	Procedure
1	a. Clean the inside of the Printer with deionized air. b. Wipe it down with a lint-free cloth.
2	Clean the Printhead with a Printhead pen.
3	Pack the Printer in the original carton and packing materials.
4	Be sure to enclose any necessary paperwork, test cards, etc.

Section 7 Board Level Diagnostics

The purpose of this section to provide the User with specific Board Level Diagnostic procedures for Board Errors and Sensor Testing for the DTC500 card Printer.

Board Errors

Resolving the EE Memory Error

Symptom: An error has occurred in the permanent circuit memory.

Step	Procedure
1	Reboot the Printer.
2	If the problem persists, the Main Board will need to be replaced. See the Replacing the Main Board procedure in Section 5, page **Error! Bookmark not defined.**.
3	As an alternative to replacing the Main Print Board, the chip U16 (080239) can be replaced. (**Note:** Fargo recommends that only a qualified electronics technician perform this procedure.)

Resolving the EE Checksum Error

Symptom: An error has occurred in the permanent circuit memory.

Step	Procedure
1	Reboot the Printer.
2	If the problem persists, the Main Board will need to be replaced. See the Replacing the Main Board procedure in Section 5, page **Error! Bookmark not defined.**.
3	As an alternative to replacing the Main Print Board, the chip U16 (080239) can be replaced. (**Note:** Fargo recommends that only a qualified electronics technician perform this procedure.)

Resolving the DRAM Memory Error

Symptom: An error has occurred in the removable Memory Module (SIMM).

Step	Procedure
1	Reboot the Printer.
2	If the problem persists, remove the rear cover and ensure that the SIMM (080229) is seated properly.
3	If the Memory Module is not seated properly, remove the memory simm and reinstall.
4	If the installation appears correct and the error persists, the SIMM (080229) on the Main Print Board will need to be replaced.

Resolving the RAM Memory Error

Symptom: An error has occurred in the permanent circuit memory.

Step	Procedure
1	Reboot the Printer.
2	If the problem persists, the Main Board will need to be replaced. See the Replacing the Main Board procedure in Section 5, page **Error! Bookmark not defined.**.
3	As an alternative to replacing the Main Print Board, the chip U17 (080229) can be replaced. (**Note:** Fargo recommends that only a qualified electronics technician perform this procedure.)

Resolving the FPGA Error

Symptom: An unexpected hardware error has occurred.

Step	Procedure
1	Reboot the Printer.
2	If the problem persists, the Main Board will need to be replaced. See the Replacing the Main Board procedure in Section 5, page **Error! Bookmark not defined.**.
3	As an alternative to replacing the Main Print Board, the chip U2 (080066) can be replaced. (**Note:** Fargo recommends that only a qualified electronics technician perform this procedure.)

Sensor Testing

Step	Procedure
1	Check the voltage to determine if a Sensor is working.
2	a. Test the voltage of each Sensor using ground (GRD = Chassis) to the correct pin on each connector. See the **Sensor Location and Voltages** table on the next page). b. Block a slot Sensor with a card. c. Cover a reflective Sensor with a card.
3	a. Troubleshoot the Ribbon Sensor by using the RibbonTraq marks on the Ribbon and Film to cover the Ribbon and Film Sensors. (**Note:** The numbers indicate the location on J16, as shown in the **Sensor Location and Voltages** table on the next page). b. Open the upper module to find the Ribbon Sensor orientation. (**Note:** The numbers indicate the location on J16, as shown in the **Sensor Location and Voltages** table on the next page.)

Reviewing the Sensor Location and Voltages

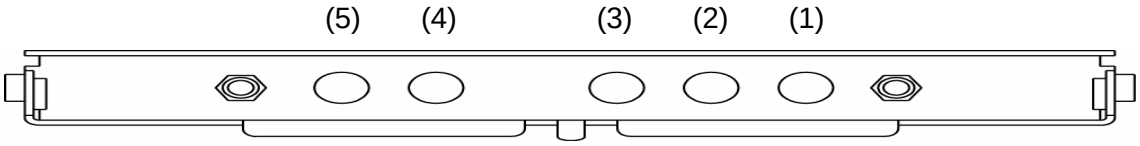
Sensor	Location	Pin	Low Range VDC	High Range VDC
Card Sensor (near Cleaning Cart)	J15	4	Unblocked .17 - .9	Blocked 3.0 – 3.3
Cover Open Sensor (plastic top)	J4	16	Unblocked .17 - .9	Blocked 3.0 – 3.3
Encoding TOF Platen Home	J29	4	Unblocked .17 - .9	Blocked 3.0 – 3.3
Flipper Table Card Sensor	J15	8	Unblocked .17 - .9	Blocked 3.0 – 3.3
Flipper Table Sensor	J7	4	Covered $\leq$ .9	Uncovered 3.0 - 3.3
Hopper Lift Sensor	J4	12	Unblocked .17 - .9	Blocked 3.0 – 3.3
Dual Hopper Position	J32	4	Unblocked .17 - .9	Blocked 3.0 – 3.3
Printhead lift Sensor	J6	8	Unblocked .17 - .9	Blocked 3.0 – 3.3
Magnetic Card Sensor	J7	8	Covered $\leq$ .9	Uncovered 3.0 - 3.3
Bypass Feed/Hopper Card Sensor	J4	4	Covered $\leq$ .9	Uncovered 3.0 - 3.3
Hopper Door Sensor (not used)	J4	8	Unblocked .17 - .9	Blocked 3.0 – 3.3

Continued on the next page

Reviewing the Sensor Location and Voltages (continued)

Sensor	Location	Pin	Low Range VDC	High Range VDC
Print Station Open Sensor	J6	4	Unblocked .17 - .9	Blocked 3.0 – 3.3
Print TOF Sensor	J31	4	Unblocked .17 - .9	Blocked 3.0 – 3.3
Ribbon Encoder	J6	12	Unblocked .17 - .9	Blocked 3.0 – 3.3
Ribbon Sensor (5)	J16	3	Covered $\leq$ 0.9	Uncovered 3.5 – 5.0
Ribbon Sensor (4)	J16	5	Covered $\leq$ 0.9	Uncovered 3.5 – 5.0
Ribbon Sensor (3)	J16	11	Covered $\leq$ 0.9	Uncovered 3.5 – 5.0
Ribbon Sensor (2)	J16	7	Covered $\leq$ 0.9	Uncovered 3.5 – 5.0
Ribbon Sensor (1)	J16	9	Covered $\leq$ 0.9	Uncovered 3.5 – 5.0

Reviewing the Sensor Layout on Ribbon Sensor array



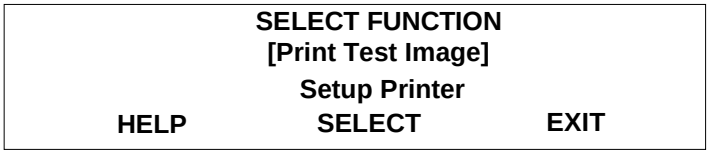
Section 8 LCD On-Line Menu Navigation

The purpose of this section to provide the User with specific procedures for LCD On-Line Menu Navigation, Test Image Printing and Printer Setup for the DTC500 card Printer.

Entering the LCD Menu and selecting an Option

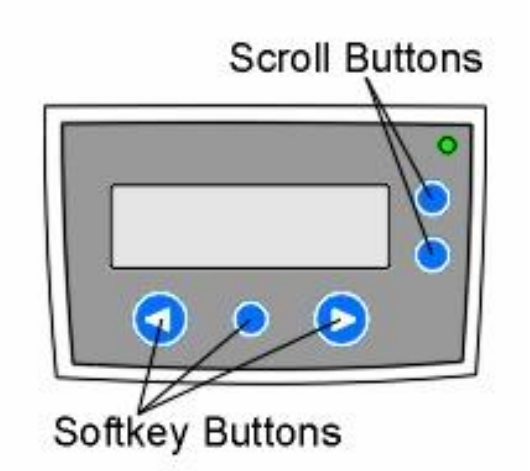
The MENU option is above the center softkey button, as shown below. This allows access to several test, setup and reporting functions. The Selecting from the Menu Option Tree Structure in Section 8, page 252, shows the available menu options. A description of each option and its function is included on the pages following the on-line menu.

Step	Procedure
1	Press the **MENU** button to bring up the **Select Function** screen appears, as shown here.
	Use the scroll buttons to move up or down through the menu options, as shown below. (**Note:** The brackets appear on either side of the active Menu option.)
	Press the button below **Select** to choose an option. Choose from these five categories: **Print Test Image**, **Setup Printer**, **Show error count**, **Show card count** and **System Upgrade**.



Using the Softkey and Scroll buttons

Step	Procedure
1	The Printer has three **Softkey** buttons that appear below the LCD display. Their current function is indicated by the words appearing above them. This function will change according to the Printer's current mode of operation. • Press the corresponding softkey button under the choice you wish to select. (**Note:** If no word appears above a particular button, this indicates it has no function in that particular mode of operation.)
2	The Printer has another type of button on its control pad called **Scroll** buttons. These buttons are located just to the right of the LCD display. • Use these buttons to scroll through the help text, to navigate through the Printer's menu and to adjust certain Printer setting. (**Note:** The Printer will indicate when the scroll buttons are active by displaying ⬍ on the right-hand side of the LCD display. If scrolling through a list, this symbol will change to ⬆ if you have reached the bottom of the list or ⬇ if you have reached the top.)

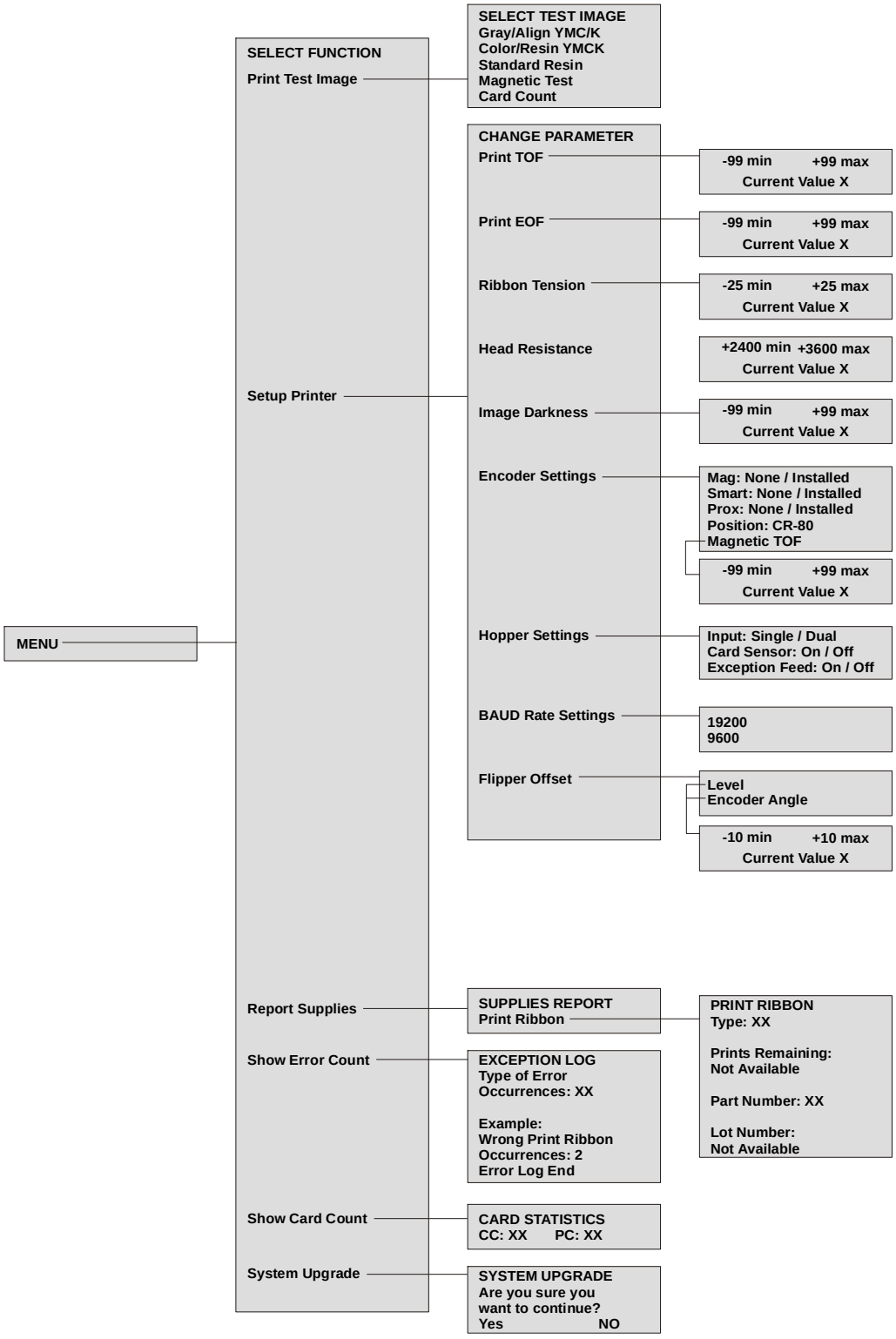


Accessing the Menu Option Structure Tree

When the Printer is powered on and sitting idle, a **MENU** option appears above the center softkey button.

- Use this menu option to access several test, setup and reporting functions.
- Refer to the Menu Option Structure Tree for all available menu options, on the next page.

Selecting from the Menu Option Structure Tree



Using the LCD Menu

Step	Procedure
1	a. To enter the Printer's LCD menu, press the center button labeled **MENU**. (**Note:** The Select Function screen will appear.) b. Use the scroll buttons to scroll up or down the list of menu options. (**Note:** Brackets will appear on either side of the active menu option.) c. Press the **SELECT** button to enter or select the desired option.

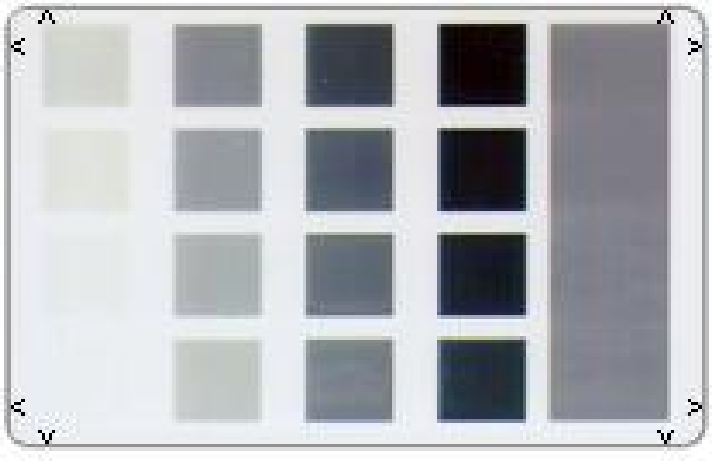
Printing the Self-test

Use this option to print a variety of preset test images that can be helpful in ensuring your Printer is functioning properly.

- Once the print Ribbon and cards are installed, a self-test should be performed to check for proper operation of the Printer.
- The standard self-test function requires only that a full-color print Ribbon and at least one card be installed. (**Note:** The Printer will begin printing this image as soon as the image has finished processing. Generally, processing only takes about 5 to 10 seconds.)

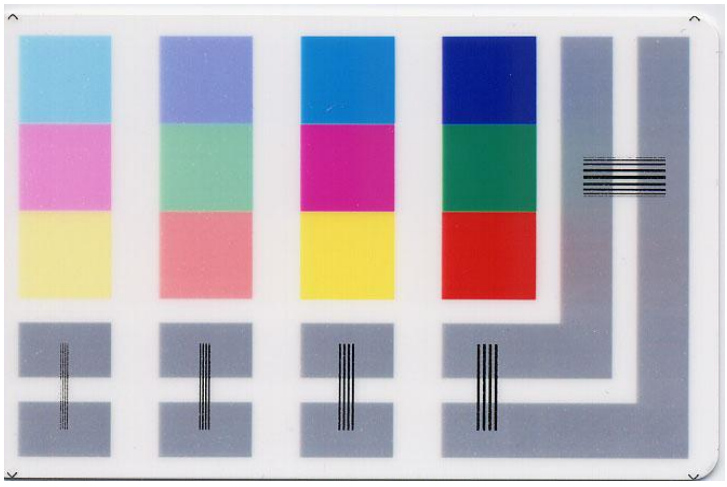
Step	Procedure
1	When the Printer is powered ON and is sitting idle, its READY screen will display on the LCD. Press the **MENU** button to enter the MAIN MENU screen.
2	Press the **SELECT** button to enter the PRINT TEST IMAGE menu.
3	Use the scroll buttons to scroll to the type of self-test you would like the Printer to perform. • Note the name of each self-test indicates the Ribbon panels required in order for the self-test to print. • For example, the Color/Resin YMCK self-test can be printed with either a YMCKO or YMCKOK full-color print Ribbon. Press the **SELECT** button to begin printing. The self-test print will begin as soon as the test image is processed.

Reviewing the Gray/Align YMC (DTC510/515) and Gray/Align YMC/K (DTC520/525) Self-Test



Reviewing the Color/Resin YMCK Self-Test

Step	Procedure
1	Use this card to determine Image Placement and confirm that (a) the image colors are properly reproduced and (b) the Resin Panel is printing properly. (**Note:** The Image consists of twelve spot colors, YMC and RGB, as well as gray density bars and thin resin lines.)

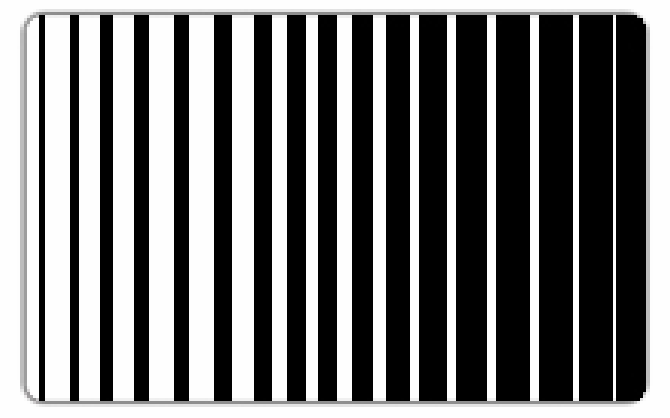


Reviewing the Card Count YMC Self-Test

Step	Procedure
1	Use this card to view counts for Card Count (CC) and Pass Count (PC). • The **Card Count** is the total number of cards the Printer has produced. **Pass Count** is the total number of print passes made by the Printhead. (**Note:** A pass is measured each time a single Ribbon panel is printed or passes beneath the Printhead.)

Reviewing the Standard Resin Self-Test

Step	Procedure
1	Print this card with any resin Ribbon. However, it will work best with a standard resin black Ribbon.



Using the Magnetic Test option (only with Magnetic Encoding Module)

Use this option only if Magnetic Encoding Module is installed in your Printer.

Step	Procedure
1	Select this option to test the module. (**Note:** This test will not print on a card, but will simply feed, encode and eject a blank card.) Be sure to have Magnetic Stripe cards installed in your Printer when running this test.

Setting up the Printer

In most cases, these settings should only be modified by qualified service personnel.

- If adjustment is necessary, refer to the Printer's Technical Service and Maintenance Manual (available upon request) for detailed instructions or call for technical assistance.
- If you would like to make small adjustments to Print TOF/EOF (offset) or Image Darkness, first try making these changes through the Printer driver's Image Position and Image Color controls prior to changing the internal Printer settings.

Caution #1: These settings are optimized at the factory and will rarely need to be changed.

Caution #2: Do not alter these settings unless it is absolutely necessary.

Caution #3: If you do need to change these settings, it is important to note that the factory settings for each specific Printer are recorded on a label on the bottom of the Printer. Refer to this label if you ever need to reset the Printer settings back to the factory defaults.

Use this option to change the Printer's internal settings for controlling the procedures in this section.

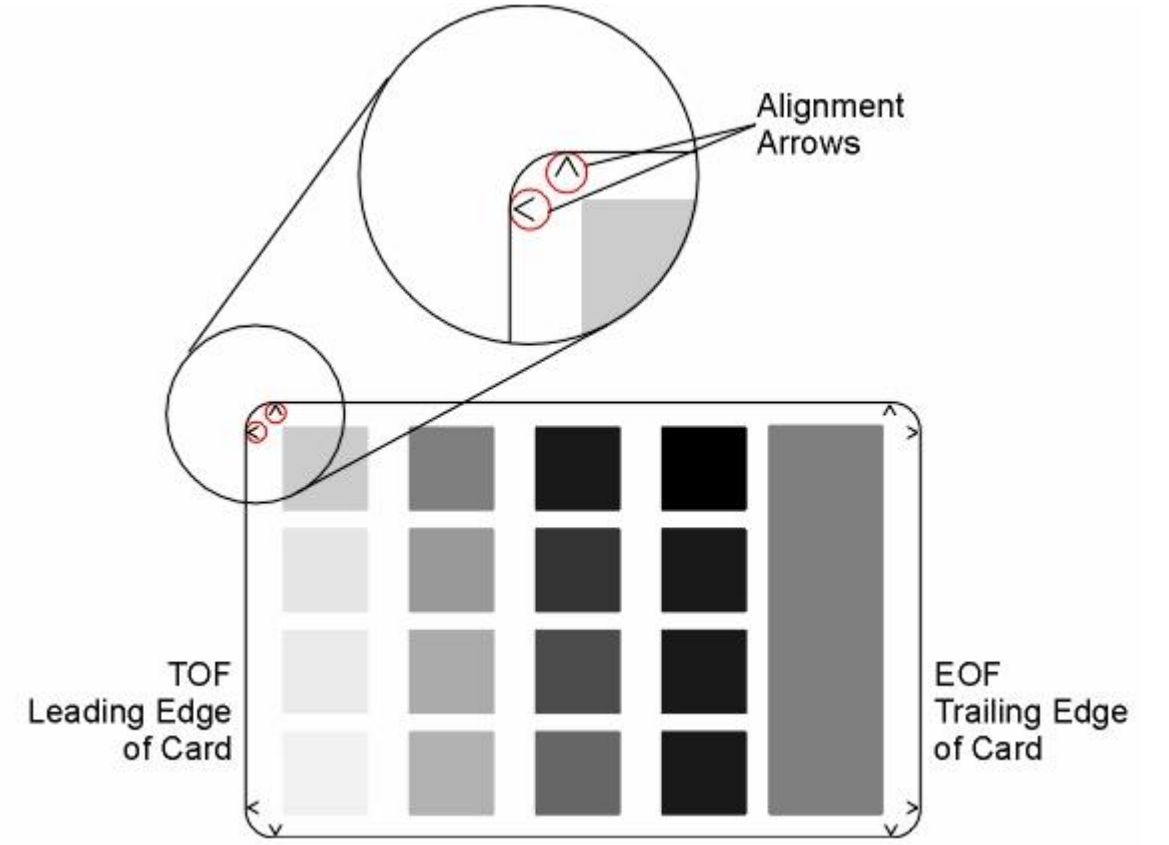
Print TOF and Print EOF Alignment Procedures

The Print TOF and Print EOF procedures must be performed as a single alignment process. The goal of these procedures is to align the printed image to precisely line up with the edges of the card as shown below. Notice that when aligned properly, the test print's Alignment Arrows will fall just inside the edges of the card.

This information pertains to the two procedures on the next page:

- **Alignment Test Image:** The alignment test image is designed for setting these parameters. Be sure to run this test after each adjustment. Run the Alignment Test Image by selecting the following options: **MENU**, **Print Test Image** and **Gray/Align YMC** (DTC510/515) or **Gray/Align YMC/K** (DTC520/525).
- **Value and Settings Changes:** Change the settings in the procedures below by choosing the following options: **MENU**, **Setup Printer** and the parameter to be changed. Change the value by pressing the appropriate scroll button and press **SELECT** to save the value.

Continued on the next page



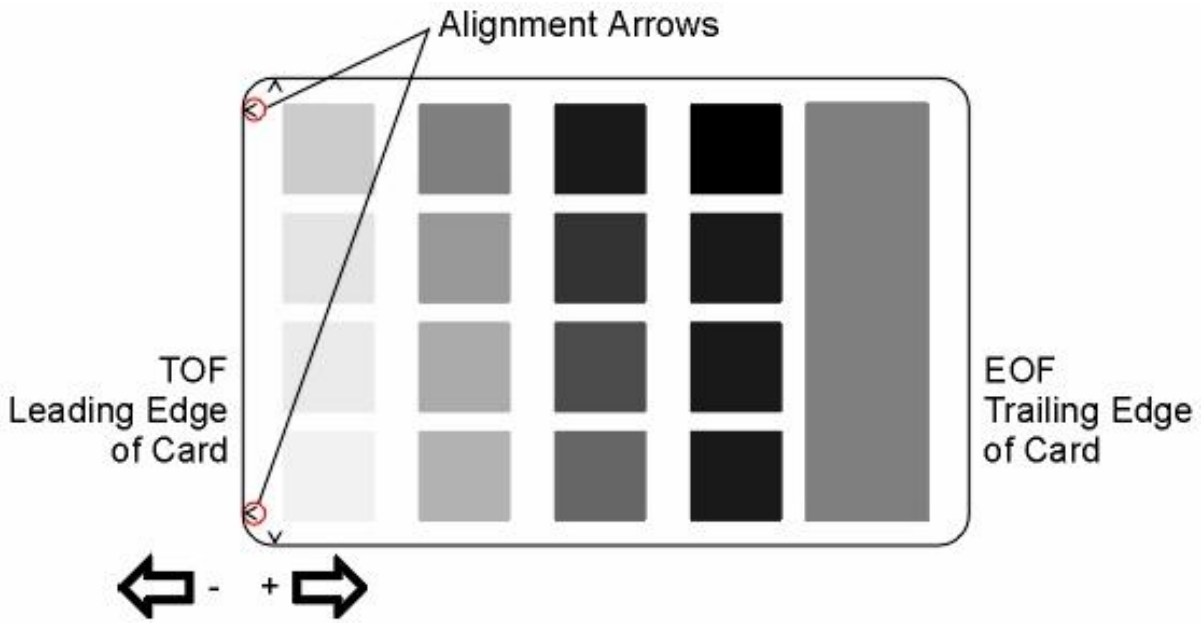
Preparing to Adjust the Print TOF and Print EOF

Step	Procedure
1	Before starting the alignment procedures, you must first establish a baseline from which to start your adjustments. To do this, select **MENU**, **Setup Printer** and set these starting parameters in each of the following Setup Printer options: Print TOF: +30 and Print EOF: -30.

Setting the Print TOF

Use this procedure to position the printed image correctly on the leading edge of the card.

Step	Procedure
1	Choose **MENU**, **Print Test Image** and **Gray/Align YMC** to print a test card.
2	Select **MENU**, **Setup Printer** and **Print TOF**.
3	Record the **Print TOF** value on the test card (you just printed).
4	Examine the test card. (**Note:** When centered properly, the Alignment Arrows should appear just at the edge of the card's leading edge. If your test card does not look like the sample shown below, go to Step 5 to adjust the Print TOF.)



Continued on the next page

Setting the Print TOF (continued)

Step	Procedure
5	a. Decrease the Print TOF value to move the printed image more toward the leading edge of the card. b. Increase the Print TOF value to move the printed image more toward the trailing edge of the card. • The numbers being entered for the settings are in ½ pixels. • The number of pixels is equal to the measurement in inches times 600 or the measurement in mm times 23.6. (For example, 0.100 inches or 2.54mm equals 60 increments on the LCD.)
6	Press **SELECT** to save the value and print another test card.
7	Repeat steps 1 to 6 until the test image is correctly positioned as shown above.

Setting the Print EOF

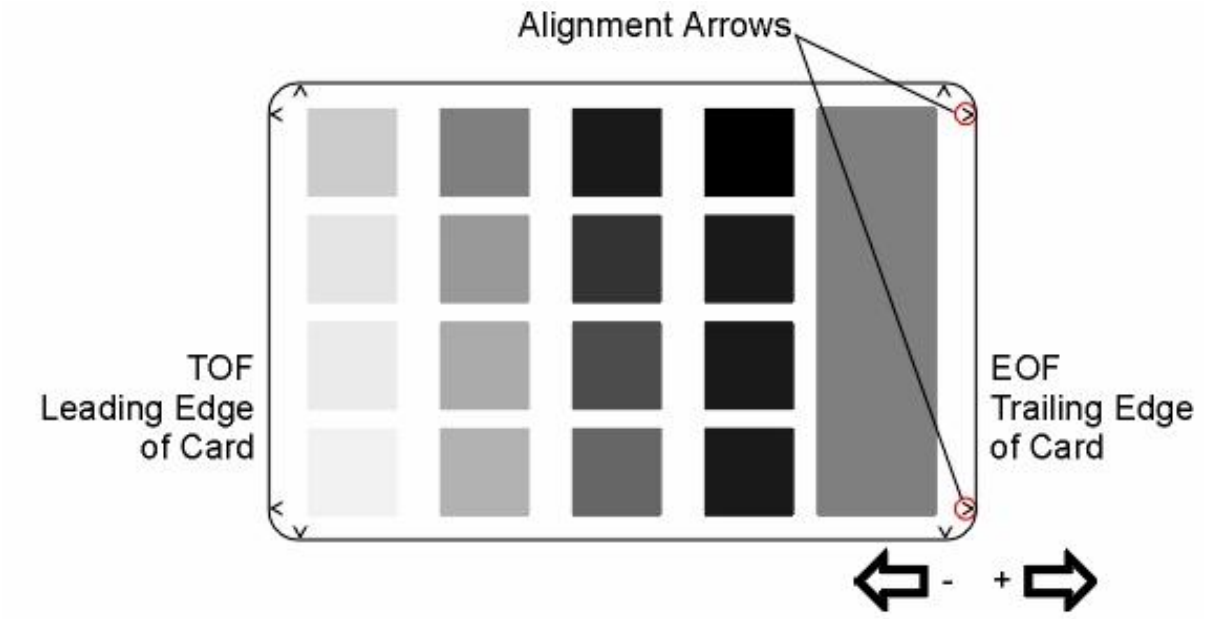
This procedure positions the printed image correctly on the trailing edge of the card.

Step	Procedure
1	Choose **MENU**, **Print Test Image** and **Gray/Align YMC** to print a test card.
2	Select **MENU**, **Setup Printer** and **Print EOF**.
3	Record the **Print EOF** value on the test card you just printed.
4	Examine the test card. a. When centered properly, the Alignment Arrows should appear just at the edge of the card's Trailing edge. b. If the test card does not look like the sample shown below, go to step 5 to adjust the Ribbon Tension.

Continued on the next page

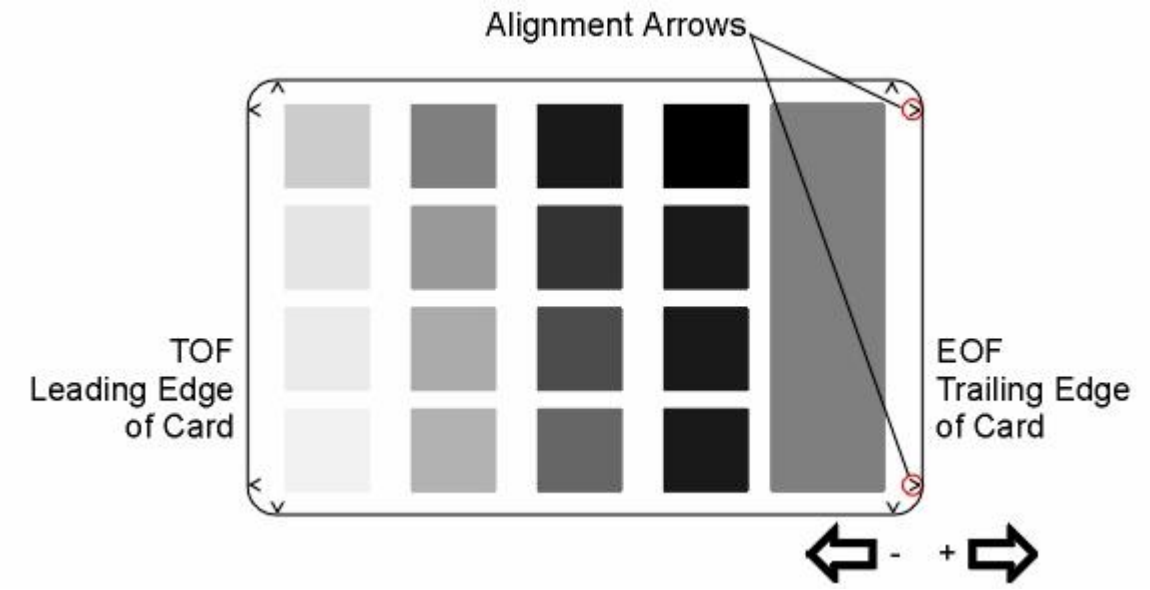
Setting the Print EOF (continued)

Step	Procedure
5	a. Decrease the Print EOF value to move the printed image more toward the leading edge of the card. b. Increase the Print EOF value to move the printed image more toward the trailing edge of the card. • The numbers being entered for the settings are in ½ pixels. • The number of pixels is equal to the measurement in inches times 600 or the measurement in mm times 23.6. (For example, 0.100 inches or 2.54mm equals 60 increments on the LCD.)
6	Press **SELECT** to save the value. Print a test card as described in step 1.
7	Repeat Steps 1 to 6 (above) until the Test Image is correctly positioned or Ribbon wrinkle is alleviated.



Adjusting the Ribbon Tension

Step	Procedure
1	Choose **MENU**, **Print Test Image** and **Gray/Align YMC** to print a test card.
2	Select **MENU**, **Setup Printer** and **Ribbon Tension**.
3	Record the **Ribbon Tension** value on the test card (you just printed).
4	Examine the test card. (**Note:** When centered properly, the Alignment Arrows should appear just at the edge of the card's Trailing edge. If the test card does not look like the sample shown below, go to step 5 to adjust the Ribbon Tension.)



Adjusting the Ribbon Tension (continued)

Step	Procedure
5	a. Decrease the Ribbon Tension value to move the end of the image toward the leading edge of the card if the alignment arrows are not printing on the card, b. Increase the Ribbon Tension value to move the end of the image toward the trailing edge of the card. **Caution:** Be sure to make adjustments in small increments of ±2, to avoid over-adjusting this setting. For example, the Ribbon may jam or break if the setting is set too high.
6	Press **SELECT** to save the value and print another test card.
7	Repeat Steps 1 to 6 until the test image is correctly positioned. See the previous page.

Setting the Printhead Resistance

Step	Procedure
1	Locate the Printhead Setting Number on the bottom of the Printhead. The number reads **R=XXXX**.
2	Select **MENU**, **Setup Printer** and **Printhead Resistance**. Enter the given value for the Printhead.
3	Press the **Select** button to save the value.

Adjusting the Image Darkness

Step	Procedure
1	Choose **MENU**, **Print Test Image** and **Gray/Align YMC** to print a test card.
2	Select **MENU**, **Setup Printer** and **Image Darkness**.
3	Record the **Image Darkness** value on the test card last printed.
4	Examine the test card.
5	Adjust the Image Darkness value if needed. Enter a negative value to lighten the printed image. **OR** Input a positive value to darken the printed image. **Caution:** Be sure to make adjustments in small increments of ± 4, to avoid over-adjusting this setting. The Ribbon can jam or break if the setting is too high.
6	Press **SELECT** to save the value.
7	Print a test card as described in Step 1.
8	Repeat Steps 1 to 7 until the image darkness is correct.

Changing the Encoder Settings

Use this option to choose the settings that coincide with the Printer's current encoding configuration. Use the scroll buttons to select the option (you want to change).

Step	Procedure
1	Select **MENU**, **Setup Printer** and **Encoder Settings**.
2	Change the desired option as needed. • **Mag:** Press the **CHANGE** button to select **None** or **Installed** according to whether or not a Magnetic Stripe Encoder is installed. • **Smart:** Press the **CHANGE** button to select **None** or **Installed** according to whether or not a Smart Card Encoder is installed. • **Prox:** Press the **CHANGE** button to select **None** or **Installed** according to whether or not a Prox Card Encoder is installed. • **Position:** This option is set according to the card size for which your Encoder is physically positioned inside the Printer. (**Note:** All DTC500 Series Printers are configured only for **CR-80** size cards.) Do not change this setting.
3	Press **SAVE** to save the value.

Adjusting the Magnetic TOF

Use this setting to position the magnetic data at the correct distance from the leading edge of the card.

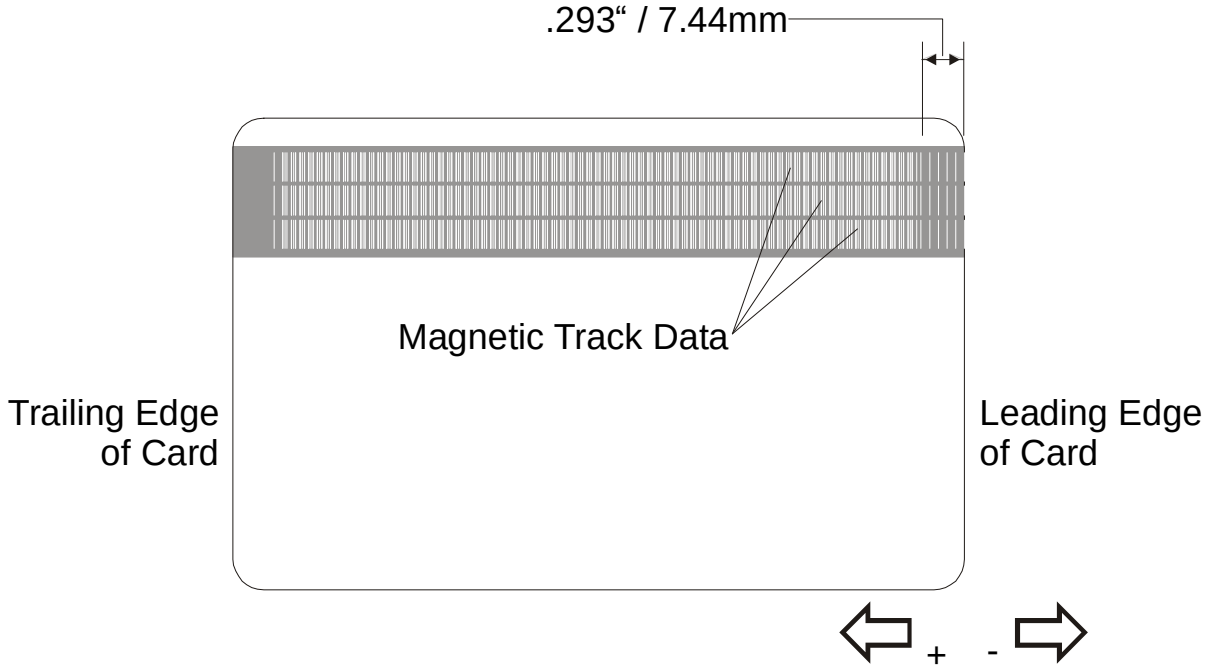
- The Magnetic TOF is the distance from the edge of the card to the Start Sentinel (SS).
- The Start Sentinel marks the beginning of the encoded data. (**Note:** According to the magnetic recording standard (ISO 7811), the correct Start Sentinel distance is 0.293 inches ± 0.020 inches (7.44 mm ± 0.51 mm) from the leading edge of the card.)

Step	Procedure
1	a. From the application program, print and encode a test card. b. Measure this distance by making the data visible using a magnetic viewer or developer solution. c. Alternatively, use a Magnetic Card Analyzer to measure the Start Sentinel distance.
2	a. Use a magnetic viewer or developer solution or spray to make the magnetic data visible (in order to identify the Start Sentinel as the first set of magnetic lines or first one-bit, which are visibly closer together than the large number of evenly spaced lines or leading zero-bits that fill the space to the edge of the card, as shown on the next page). b. Use a magnifying device with a built-in measuring scale to measure the distance from the edge of the card to the Start Sentinel in the data, as shown on the next page.
3	If the Start Sentinel is too far from the leading edge of the card, reduce (or make negative) the Magnetic TOF setting needs. **OR** If the Start Sentinel is too close to the leading edge of the card, increase (or make positive) the Magnetic TOF setting needs.
4	Select **MENU**, **Setup Printer** and **Magnetic TOF**.
5	Record the Magnetic TOF value on the test card last printed.

Continued on the next page

Setting the Magnetic TOF (continued)

Step	Procedure
6	Enter a Magnetic TOF value appropriate for the direction for the magnetic data to move. • As a rule, a shift of ±27 equals about .0625" (1/16") or 1.6mm. (**Note:** Keep this in mind when adjusting this option to avoid over-adjusting.) • If the negative value is set too high, for example, the Printer may start encoding before the card's Magnetic Stripe reaches the encoding head.
7	Repeat steps 1 to 5 until the Magnetic TOF is correct.
8	Press **SELECT** to save the value.



Changing the Hopper Settings

Use this option to choose settings related to your Printer's Card Input Hopper. Use the scroll buttons to select the option to change.

Step	Procedure
1	Select **MENU**, **Setup Printer** and **Hopper Settings**.
2	Change the desired option as needed for **Input**. • Press the **CHANGE** button to select **Single** or **Dual** (based on whether your Printer model includes a single or dual Card Input Hopper).
3	Change the desired option as needed for **Card Sensor**. • Press the **CHANGE** button to turn the Hopper's Card Sensor **On** or **Off**. **Note #1:** The default setting is for this Sensor to be turned ON. This Sensor only needs to be turned OFF if you are using blank cards with pre-printed backs, non-white, dark colored blank cards or with cards that have a Magnetic Stripe in the non-ISO standard position. **Note #2:** In some cases, these types of cards cannot be seen by the Sensor. This leads the Printer to assume that the Card Input Hopper is empty and that cards will not feed. Turn the Sensor to OFF to correct this problem.
	Change the desired option as needed for **Exception Feed**. • Press the **CHANGE** button to turn the Hopper's Exception Card Feed feature **On** or **Off**. **Note #1:** The default setting is for this feature to be turned OFF. In this case, the Card Input Hopper rests in the DOWN position when the Printer is sitting idle as this promotes easier card loading. **Note #2:** If you would like to use the exception feed feature, change this setting to ON. This will cause the Card Input Hopper to rest in the UP position, allowing the necessary space (below the Hopper) for exception cards to be inserted. The only caution when using this feature is that cards must be loaded properly.
3	Press **SAVE** to save your settings.

Changing the BAUD Rate Settings

Apply this setting only if the Printer provides support for the Embedded Fonts and Bar Codes option.

Step	Procedure
1	Select **MENU**, **Setup Printer** and **BAUD Rate Settings**.
2	Change to the appropriate option: **19200** or **9600**.
3	Press the **Select** button to save the value.

Adjusting the Flipper Offset

Step	Procedure
1	Select **MENU**, **Setup Printer** and **Flipper Offset**.
2	Select **Level** or **Encoder Angle**. • Use the **Level** option to set the position of the Flipper so it is level with the card path. • Use the **Encoder Angle** option to fine tune the position of the Flipper in relation to the Printer's built-in Encoder if your Printer is equipped with this option.
3	Change these settings in small increments if the card is not feeding correctly off the Card Flipper onto the card path or into he Encoder. • Decrease the **Flipper Offset** setting to lower the lip of the Flipper. • Increase the setting to raise it.
4	Press the **Select** button to save the value.

Viewing the Report Supplies

Step	Procedure
1	When using monochrome resin-only print Ribbons, use this option to view all of the following information about the print Ribbon installed in the Printer.
2	When using Dye-Sublimation print Ribbons, it is possible to view only the Type and Part Number fields. • **Type:** This displays the name or type of print Ribbon installed. • **Prints Remaining:** This displays the approximate number of prints remaining on your Ribbon. This information is helpful for determining about how many cards you can produce before the next Ribbon change. • **Part Number:** This displays the specific part number for your Ribbon which can be helpful when re-ordering. • **Lot Number:** This displays the print Ribbon's lot number.

Using the Show the Error Count Tool

Use the **Show the Error Count** tool to (a) troubleshoot the Printer, (b) maintain a log of up to 255 errors, (c) track how many times specific errors occur and (d) determine if certain errors are occurring more than others (in order to pinpoint an area in the Printer requiring attention).

Step	Procedure
1	a. Use the scroll buttons to move through the list of errors. b. Press the **Reset** button to clear the entire existing error log and start a new log. (**Note:** The error log will stop logging errors once it has reached its error occurrence limit of 255.)

Showing the Card Count

Step	Procedure
1	Choose **SHOW CARD COUNT** to view counts for **Card Count (CC)** and **Pass Count (PC)**. • **Card Count** is the total number of cards the Printer has produced. • **Pass Count** is the total number of print passes made by the Printhead. (**Note:** A pass is measured each time a single Ribbon panel is printed or passes beneath the Printhead.)

Selecting the System Upgrade (Firmware Upgrade)

This option is used to upgrade the Printer Firmware.

Step	Procedure
1	Upgrade by selecting **SYSTEM UPGRADE**. The LCD will prompt: **Are you sure you want to continue?**
2	Select **YES** to begin the System Upgrade. **OR** Select **NO** to return to the **READY** screen. See the the Updating the Printer's Firmware procedure in Section 9, page 275.

Section 9 Firmware Updates

The purpose of this section is to provide the User with information on the internal software or Firmware, which controls all aspects of the Printer's operation. New Firmware versions may be released containing enhancements, such as improved reliability, added features or better print quality. New Firmware updates can be downloaded from the Internet and loaded into the Printer through its parallel interface port – no chip replacement is needed. Refer to the instructions in this Section to download and install Firmware updates.

Firmware Version 1.5.9-m for our DTC500 Series, Macintosh-compatible Card Printer/Encoders. Reference Technical Update No. 43 (dated 11/06/2002).

- **Previous Firmware Versions:** Previous versions of the Firmware would not recognize the 4-megabyte memory module. (**Technician Note:** After installing the Macintosh Firmware, these versions would produce an error that required an 8-megabyte memory module to be installed in the DTC500 Series Card Printer/Encoders.)
- **Firmware Improvement:** The new version of the Firmware includes support for the 4-megabyte memory modules. (**Technician Note:** These memory modules are now being installed in all DTC500 Series Card Printer/Encoders.)

Firmware Updater Application Program

The Firmware Updater application program is the software required to send Firmware updates from the computer to the Printer. To download and install the Firmware Updater from this site, refer to the following steps (using Step 1A or Step 1B as appropriate):

Step	Procedure
1A	**Option A:** Insert the Software Installation CD into your computer's CD drive. The CD browser is set to automatically open after a few seconds, however, you will not need the browser portion of the CD for this process. a. Once the CD browser has opened, close it by clicking on the exit icon shown below. b. Use My Computer or Windows Explorer to view the contents of the CD. Windows Explorer can be opened by selecting it from the Start, Programs menu. c. Open the Utilities folder, then open the Firmware Updater folder.

Firmware Updater Application Program (continued)

Step	Procedure
1B	**Option B:** Go to the Fargo Electronics Technical Support Web site: http://www.fargo.com/tech_support/ Click on the Firmware Updater Program link.
2	Click on **OK** when prompted to **Save this Program to Disk** and then select a folder in which to save the Updater file.
3	a. Once the file has been downloaded, navigate to the location where the file was saved. The Firmware Updater program has been compressed for ease of downloading. b. Decompress the file by double-clicking on the UPDATER.EXE icon.
4	Double-click on the SETUP.EXE file to launch the Firmware Updater Setup Program
5	Follow the on-screen instructions to complete installation. Once installed, the Firmware Updater icon will appear in the Start/Programs/Fargo folder.
6	Select the Firmware Updater icon displayed below to open the Firmware Updater application program.

Downloading Firmware Updates

Step	Procedure
1	Refer to the following steps to download Firmware updates:
2	Select the **Download Firmware** button. If you have Internet access, this will automatically take you to the Firmware Updates section of the Fargo website. If it does not, manually open your browser and go to the Firmware Updates section in the Fargo Electronics Technical Support Web site: http://www.fargo.com/tech_support/
3	Select your specific printer model and click on the **Submit** button. Click on the Firmware file link labeled for the specific Printer model.
4	Click on **OK** when prompted to **Save this Program to Disk** and then select a folder in which to save the Update file.
5	a. Once the file has been downloaded, navigate to the location where the file was saved. (**Note:** The Firmware Update file has been compressed for ease of downloading.) b. Decompress the file by double-clicking on the designated icon.

Updating the Printer's Firmware

Now that you have installed and opened the Firmware Updater program and downloaded the firmware update file, you can begin updating your printer's firmware.

It is important to note that there are two types of Firmware for certain Fargo Printer models, the **Main Firmware** and the **LCD Firmware**, each of which has a slightly different update process.

Updating the Main Firmware

Step	Procedure
1	If you have not already done so, select Start -> Programs -> Fargo and open the Firmware Updater program. From the Firmware Updater program, click the **Select Update File** button, as shown on the next page in the Firmware Updater (Version 3.0.6) window.
2	Go to the folder, in which you saved the update file, select it and click **Open**. (**Note:** The file name, location and version will appear in the **Firmware Updater** window, as shown on the next page.)
3	Click the **Select Printer** button and select the specific Fargo Printer model, click **OK**. Once your printer model has been selected, the **Send Update** button will become active.
4	At this time, the Printer must be prepared to receive the Firmware update file. To do this, make sure the Printer is powered ON and in its READY mode. Then, press the Printer's **MENU** button.
5	Use the scroll buttons to scroll down to the **System Upgrade** option and press **SELECT**. When the Printer asks if you would like to continue, press **YES**.
6	a. Wait while the Printer restarts into the System Upgrade mode. b. Verify that the interface cable is securely connected to both the Printer and the computer and press the **START** button. • The Printer will wait up to 60 seconds to receive the Firmware update before timing out. • The clock will be indicated on the LCD Display.
7	From the Firmware Updater software, click the **Send Update** button to bring up the **Firmware Updater** dialog box, as shown on the next page.

Continued on the next page

Updating the Main Firmware (continued)

Firmware Updater
The print spooler is sending firmware update data to your printer. Please refer to the LCD display on your printer for update completion notification.
OK

Continued on the next page

Updating the Main Firmware (continued)

Step	Procedure
8	**Wait:** The Firmware update will now take a few minutes. Check the Printer's LCD for the status. (**Note:** When the update is complete, the LCD will indicate if the update was successful.)
9	If the Upgrade Successful is displayed, click on **Exit** on the **Sending Update to Printer** dialog screen.
10	Press the Printer's **Exit** button.
11	When prompted, turn the Printer power OFF for a few seconds and then back ON to complete the update process. (**Note:** As the Printer restarts, you will see the new Firmware version appear on the LCD.)
12	a. If the upgrade was not successful, the LCD will either display **Upgrade Failed or Upgrade Firmware Now** on boot up. b. If you receive this message, try updating the Firmware again.

Updating the LCD Firmware

Step	Procedure
1	Make sure the Printer is powered ON, connected to the PC and in its READY mode.
2	From the Firmware Updater program, click on the **Select Update File** button.
3	Go to the folder, in which you saved the update file, select it and click **Open**. The file name, location and version will appear in the **Firmware Updater** window, as shown on the next page.
4	Click on the **Select Printer** button and select the specific Fargo Printer model, click **OK**.
5	Click on the **Send Update** button to bring up the **Firmware Updater** dialog box, as shown on the next page.
6	Wait a few minutes while the Firmware updates itself. Check the Printer's LCD for the status. When the update is complete, the LCD will indicate if the update was successful. • If **Upgrade Successful** is displayed, click **Exit** on the **Sending Update to Printer** dialog screen. Press the Printer's **EXIT** button. When prompted, turn the Printer power OFF for a few seconds and then back ON to complete the update process. As the Printer restarts, you will see the new Firmware version appear on the LCD. • If the upgrade was not successful, the LCD will display **Upgrade Failed or Upgrade Firmware Now** on boot up. • If you receive this message, try updating the Firmware again.

Continued on the next page

Updating the LCD Firmware (continued)

Firmware Updater
The print spooler is sending firmware update data to your printer. Please refer to the LCD display on your printer for update completion notification.
OK

Section 10 DTC500 Enhancement Kit Instructions Overview

The DTC500 Enhancement Kit includes several easily installed items that will enhance the functionality of your DTC500 Series Card Printer. Please refer to these instructions to install each of the items in this kit. These instructions will walk you through installing these enhancements into Printers that are still in their factory packaging. If the Printer is already unboxed and set up, ignore the steps (provided in this document) that refer to unpacking and repackaging the Card Printer.

If you have any questions, please feel free to contact FARGO Electronics Support Services online at: http://www.fargopartner.com/support_services/online_support.asp

Reviewing the Parts (included with the Kit; 1 set per Card Printer)

Description	Part Number	Description	Part Number
Poly bag	260176	Card Weight(s) (2 for DTC515/525)	D850448
Software Installation CD	510805	TOF Card Sensor Retention Bracket	D850455
DTC5XX Firmware Update Diskette	510858	Plastite screw	F000177
Retainer Clip	897144	Quick Start Guide	L000107
Main Pulley	D850190	Top Cover Media Loading Label	L000108
Card Input Hopper 1	D850253-01	Input Hopper Door Label	L000188
Card Input Hopper 2 (DTC515/525)	D850253-02	Yellow Cardboard Cleaning Cartridge Insert	L000160
Cleaning Cartridge Assembly	D850254	Upgrade Instruction Disk	L000196
Card Feed Roller (1)	D850415	Snap Ring (2) E-Clip (2)	140048 140062

Reviewing the required Tools

- Phillips #1 screwdriver (1)
- Torx T10 screwdriver (1)
- Centronics parallel print cable (1)
- Computer (1)
- Software: Requires (a) DTC500 Firmware version 1.5.1 (510858; included with diskette); (b) FARGO Firmware Updater Program (included with Software Installation CD); and (c) DTC500 Printer Driver (included with Software Installation CD).

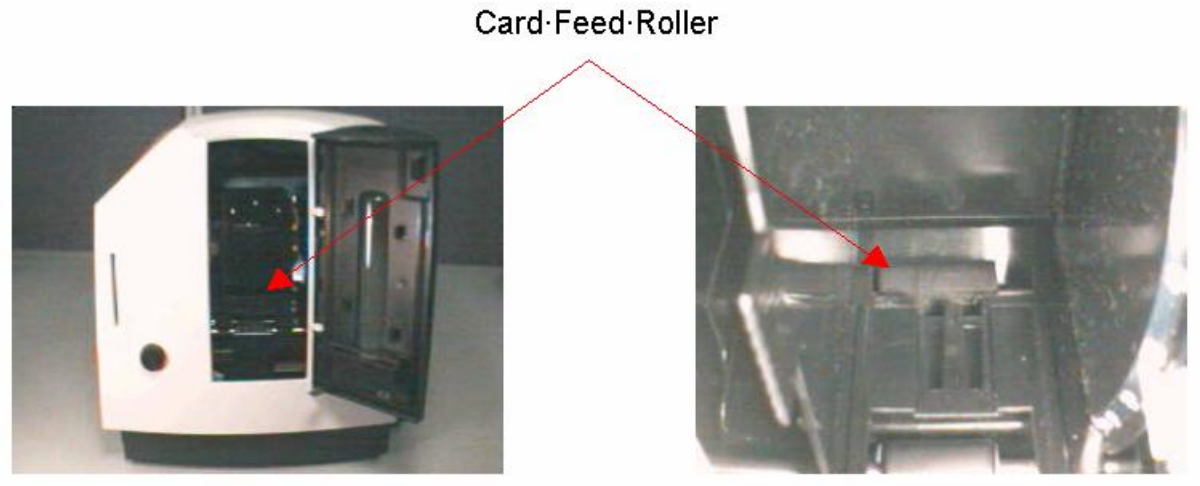
Reviewing the required Media supplies

- 30 mil UltraCards cards (081754)
- YMCKO Ribbon (086031)

Updating the Process Strategy

Determining the Card Printer qualifications for the Update

Step	Procedure
1	Ensure that the Serial Number starts at A117 or at a larger number. (**Note:** Printers later than A140 will have the Upgrade items already factory-installed.)
2	Ensure that the Card Feed Rollers are the black, high gloss (more tacky) types. See below. (**Note:** The Card Feed Rollers should not be the gray, standard Drive Rollers, used in the Card Printer.)
3	Use this Enhancement Kit for all DTC500 Card Printers. • Printers that are older than this serial number may require additional Upgrades. • Printers that use the gray Feed Roller may also require additional Upgrades. (**Note:** Contact the FARGO Technical Support for more details on additional Upgrades.)

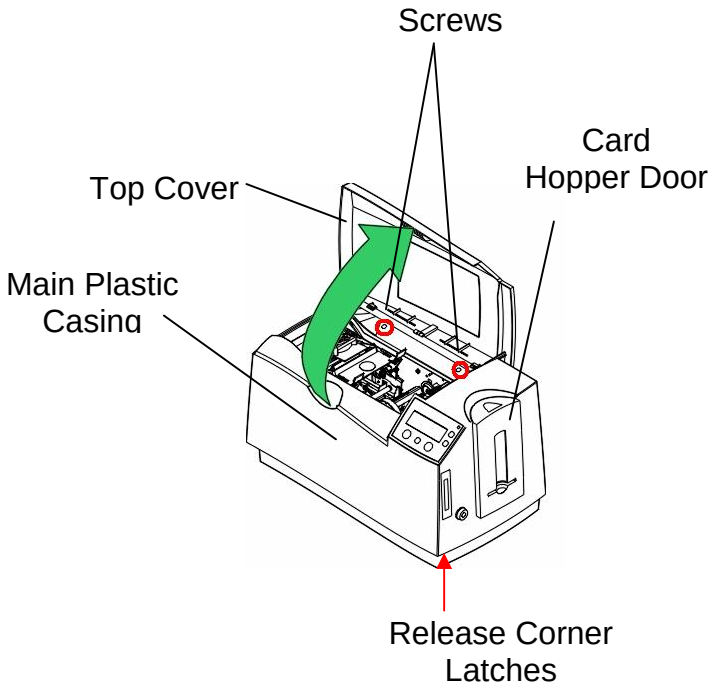


Unpacking the Card Printer

Step	Procedure
1	Remove the handles for the side of the box to release the Cover.
2	Remove the Cover and set it aside (upturned) in order to hold its parts.
3	a. Remove the Printer from the box. b. Place the foam back inside the box cover.
4	Set the Printer on the bench and remove the plastic bag wrap.
5	Remove the shipping tape from the Output Hopper, the Cover, and the Communication Ports. (**Note:** Do not discard the tape since it can be used again during repackaging.)
6	a. Open the print Cover. b. Remove the blue-colored Quality Assurance Certificate and the white-colored Cleaning Cartridge (D850254) Instruction sheet.

Removing the Printer's main plastic casing

Step	Procedure
1	Open the Top Cover of the Printer.
2	Use the Philips screwdriver to remove the two (2) screws inside the Top Cover, as shown below.
3	Open the Card Input Hopper Door to allow for proper clearance, as shown below.
4	Release the four (4) latches at the bottom corners of the Printer.
5	Lift off the Printer main plastic casing, as shown below.
6	Unplug the LCD display at plug J18 on the Main Circuit Board.
7	Unplug the Ground Strap from the Spade Connector, which is on top of the Power Supply Housing.



Inspecting the Drive Pulley

Step	Procedure
1	Locate the Drive Roller to the right of the Platen at the front of the Printer, as shown below.
2	Turn the Pulley by hand to determine whether it is firm or it is not firm.
3	If the Pulley is firm, continue to the next procedure. (**Note:** This means that Pulley does not move without rotating the Shaft.)

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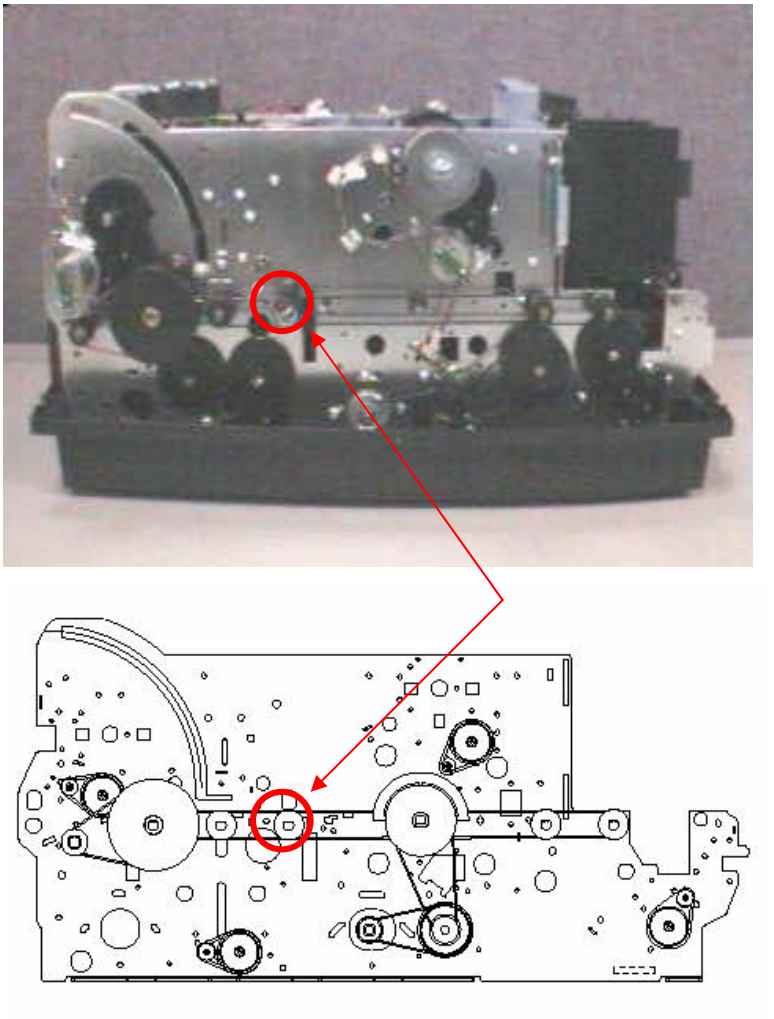
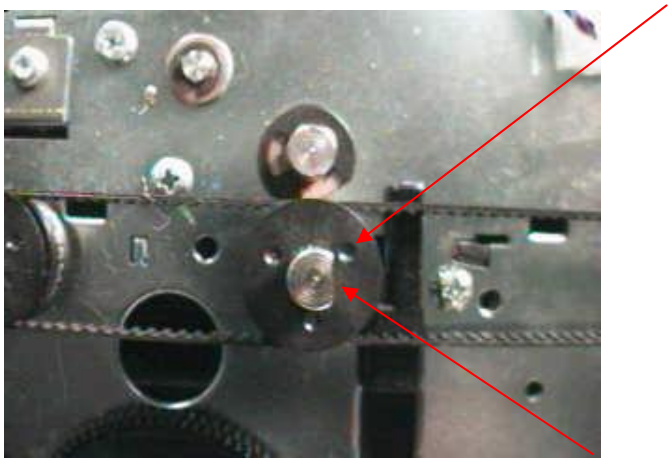


Inspecting the Drive Pulley (continued)

Step	Procedure
4	If the Pulley is not firm on the Shaft, replace it according to the procedure provided directly below. (**Note:** This means that the Pulley moves without rotating the Shaft.) a. Turn the Roller until the flat side on the Roller Shaft faces the input of the Printer. b. Confirm that all the flat sides on the Roller Drive Shafts also face the Input side. c. Remove the Pulley from the Shaft by grasping the Pulley and pulling outward. d. Remove the Drive Belt from the Pulley. e. Position the new Pulley with the three (3) mold dots facing out, as shown below. f. Place the Drive Belt around the new Pulley. g. Place the new Pulley against the Shaft. **Caution:** Be careful to align the flat of the Pulley with the Shaft flat. h. Press the new Pulley onto the Shaft.

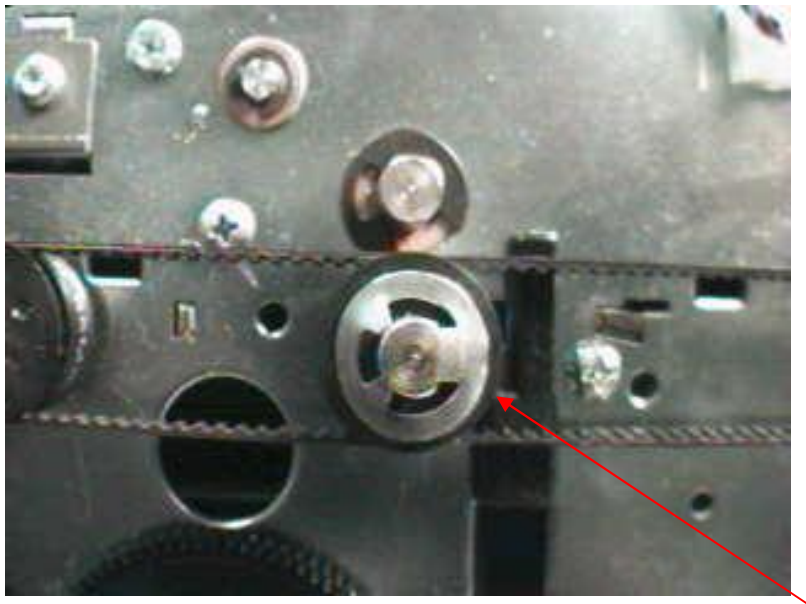
Molding dots facing out



Shaft flat facing Printer input

Installing the Push-Clip onto the Drive Roller

Step	Procedure
1	Push the metal Clip onto end of the Feed Roller until it is seated against Pulley face, as shown below.
2	Confirm that the Clip is fully seated and secure in order to ensure that it will not pull off.



Removing and installing the Card Feed Roller (D850415)

Refer to Drawing No. D850261

Tools Required: Phillips-Head Screwdriver, Retaining Ring Pliers, Small Standard Screwdriver

Step	Procedure
1	**Caution:** Turn OFF the Printer and unplug the power cord from the Printer.
2	Determine if there is a black or gray Card Feed Roller installed in the Printer. a. **Black Card Feed Roller:** Determine if the Card Feed Roller is good or bad. (**Note:** A bad Card Feed Roller has flaking of the Roller's surface that causes dirty cards.) • If it is a good Card Feed Roller, then do not replace it. • If it is a bad Card Feed Roller, then replace it according to Steps 3 to 13 in this procedure. **OR** b. **Gray Card Feed Roller:** If there is a gray Roller installed, then replace it according to Steps 3 to 13 in this procedure.
3	Remove the Hoppers.
4	Remove the Pulley from the Feed Roller Shaft. (**Note:** You may have to pull the Pulley on the Cleaning Roller Shaft to the end of the Shaft to help ease the Belt tension.)
5	Remove the Snap Ring (140048) from the Shaft. **Caution:** Be careful not to bend the Snap Ring too far.
6	Remove the E-Clip (140062) on the other end of the Shaft.
7	Remove the Bushings.

Continued on the next page

Inspecting, replacing, and installing the Card Feed Roller (D850415) (continued)

Step	Procedure
8	Slide the old Shaft out. Install the new Card Feed Roller (D850415). (**Note:** Ensure that the flat on the Shaft extends through the front Sideplate.)
9	Re-install the Bushings.
10	Re-install the Snap Ring and the E-Clip.
11	Install a new Pulley (D850190) onto the Feed Roller Shaft. a. Turn the Cleaning Roller and the Feed Roller so that the flats face toward the Output Hopper. (**Note:** The flats must be in the same position.) b. Loop the Belt over the Cleaning Roller Pulley and over the new Pulley, aligning the flat of the Pulley to the flat of the Shaft. c. On the Feed Roller, place the flat of the Pulley against the flat of the Shaft. d. Press the Pulley onto the Shaft. (**Note:** Use careful force here because you are working against the Belt.) **Caution:** It is important not to roll the Pulley into the flat of the Shaft. If the shaft is rolled into the flat, the flat can shear out the crush ribs inside the Pulley. Removing these ribs allows for free play in the Pulley and causes a poor fit. e. Slide the Cleaning Roller Pulley back into position. Slide the Feed Roller Pulley to the point where it is in line with the Cleaning Roller Pulley. (**Note:** The Pulleys need to be straight to prevent wear on the Belt.)
12	Re-install the E-Clip on the end of the Cleaning Roller.
13	Re-install the Hopper.

Installing the Sensor Holder

Step	Procedure
1	Remove the Card Output Hopper. a. Pull the Card Output Hopper out until it reaches its stop. b. Pull back on the tab on the under side of the Printer's Baseplate. c. Remove the Card Output Hopper from the Printer.
2	Lift out the Print Arm.

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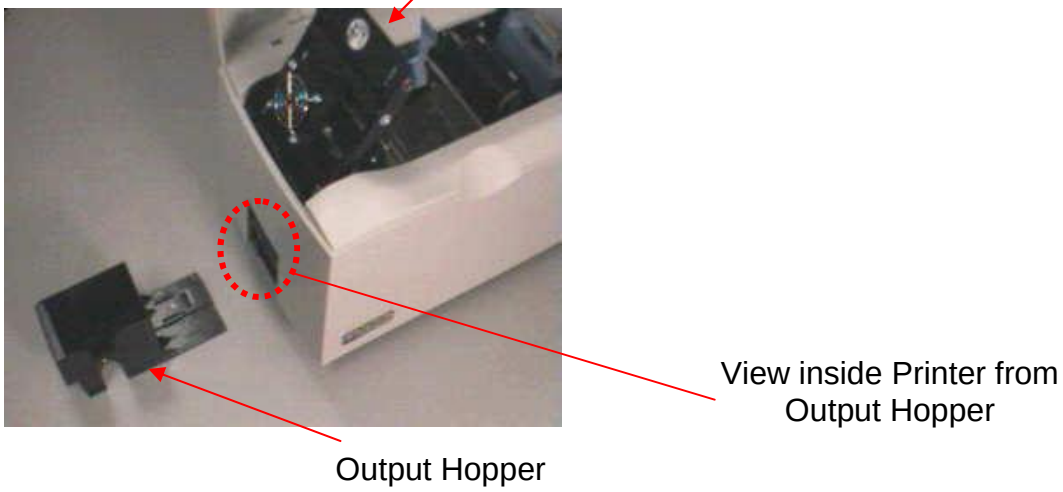

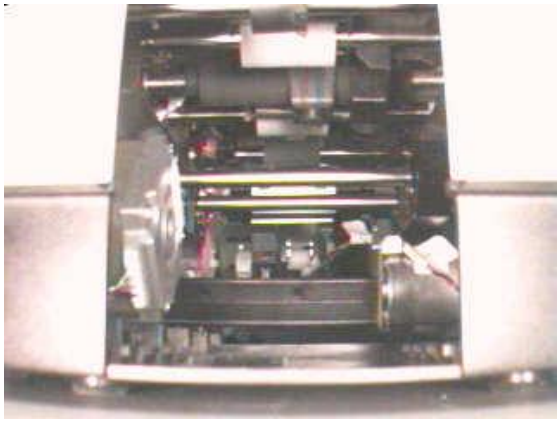

Installing the Sensor Holder (continued)

Step	Procedure
3	Reach through the Output Hopper opening with the Sensor holder and press onto the underside of the TOF Sensor. (**Note:** Hold the Sensor to your fingertip with two-sided tape for careful, steady Sensor installation.)

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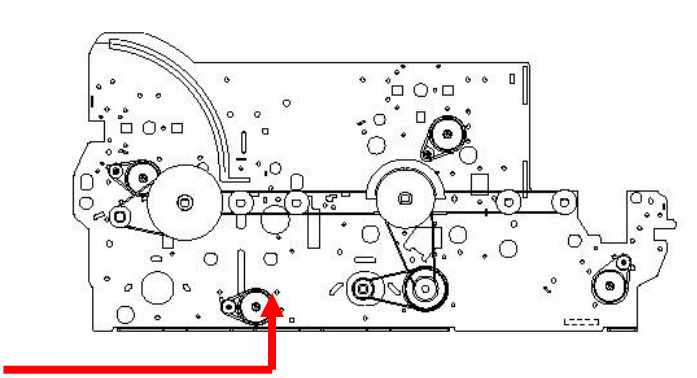
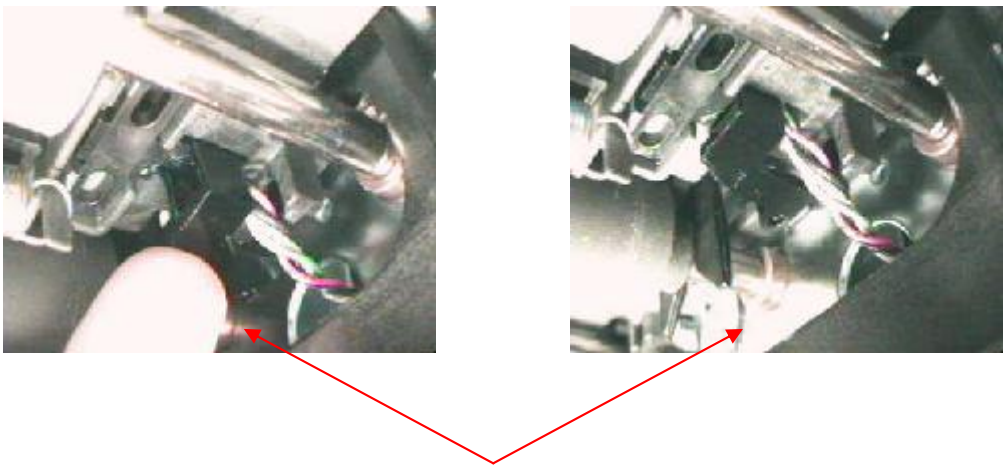


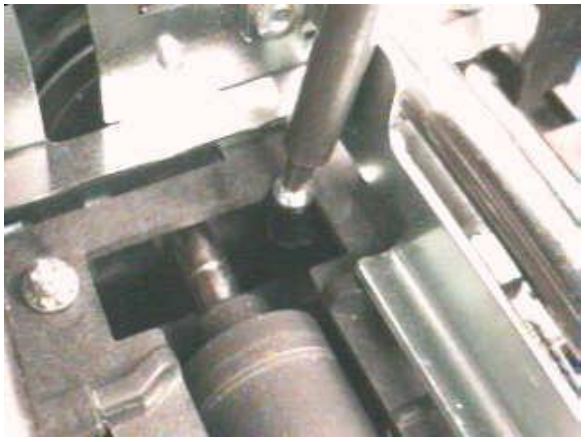
See (above) the path to install the TOF Holder.



See (above) the underside view of the TOF Holder.

Installing the Sensor Holder (continued)

Step	Procedure
4	Seat the upper portion along the black Card Guide. (**Note:** Be sure it is fully seated.)
5	Tighten the Plastitie screw (F000177) into the Sensor holder, as shown below. **Caution:** Do not overtighten. Do not use a power driver for this process. Hand tighten only.
6	Lower the Print Arm.
7	Re-install the Card Output Hopper back into its position.



Installing the new Card Input Hopper in the single Hopper units (DTC510/520)

Step	Procedure
1	Turn the Card Input Hopper Lift Drive Gear (by hand) in order to raise the Hopper if the Hopper is not in the UP position. See below. (**Note:** This ensures that the exception feed is clear.)
2	a. Face the Card Printer from the Card Input Hopper. b. Remove the three (3) screws that hold the Card Input Hopper to the Frame, as shown below (to the right).

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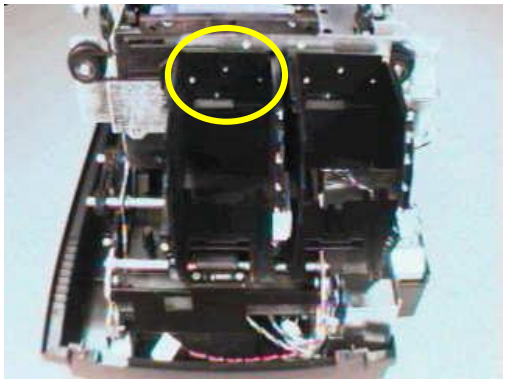
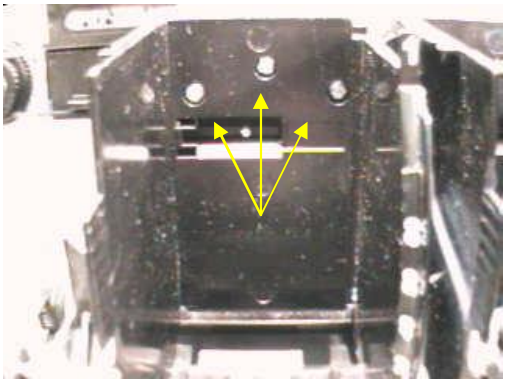
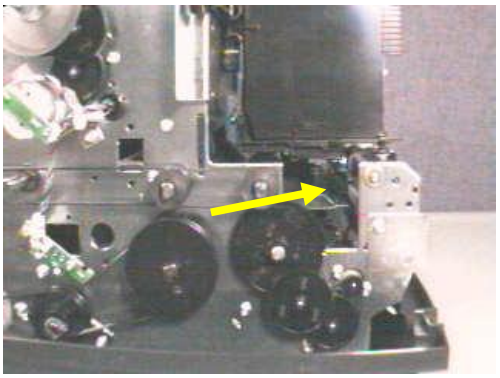




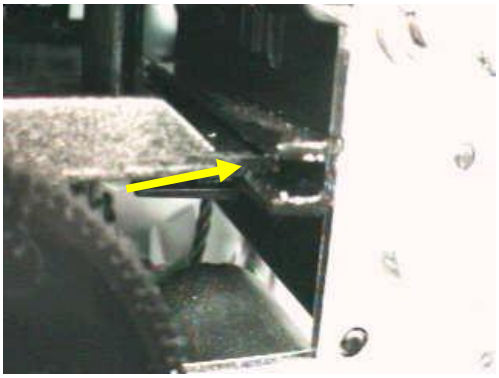
Installing the new Card Input Hopper in the single Hopper units (DTC510/520) (continued)

Step	Procedure
3	Slide the Card Input Hopper to the left in order to remove it from the Track, as shown below.
4	Install the new Card Input Hopper by sliding it to the right, as shown below. (**Note:** Ensure that the plastic guide is set along the Track.)

Continued on the next page



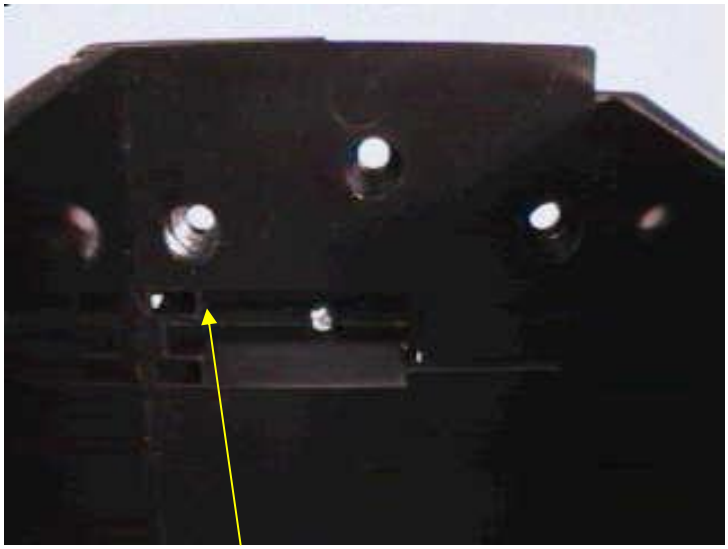
See (above) the Hopper Track.



See (above) a Hopper Track.

Installing the new Card Input Hopper in the single Hopper units (DTC510/520) (continued)

Step	Procedure
5	a. Confirm that there is a small metal washer in the left hole (toward the front of the Printer) of the three (3) Card Input Hopper screw holes. See below. (**Note:** It should be captured within the plastic molding of the Hopper.) b. If the washer is missing, use the washer from the old Card Input Hopper.
6	Replace the three (3) screws that hold the Card Input Hopper to the Frame. **Caution:** Do not tighten these screws.
7	Press down on the top of the Card Input Hopper to apply a bias toward the bottom of the Printer. (**Note:** This ensures that the Card Input Hopper is seated properly.)
8	While holding the Card Input Hopper down, tighten the three (3) screws.
9	Discard the old Card Input Hopper.

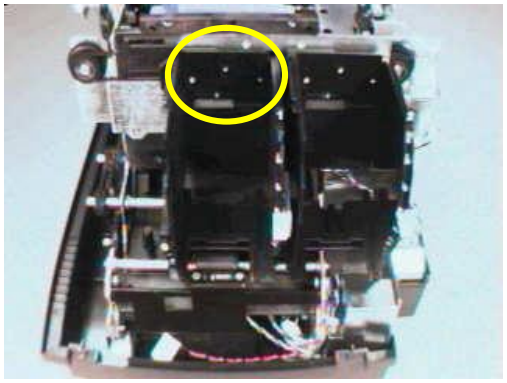


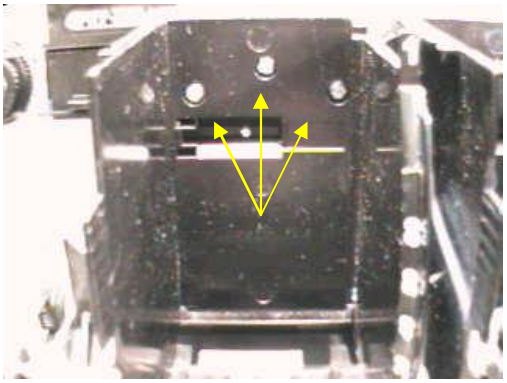
See (above) the hole with the washer.

Installing the new Card Input Hopper in the dual Hopper units (DTC515/525)

Step	Procedure
1	Remove the Card Input Hopper 1 (D850253-01) first. See below.
2	a. View the Printer from the Card Input Hopper. b. Remove the three (3) screws that hold the Card Input Hopper to the Frame, as shown below.

Continued on the next page

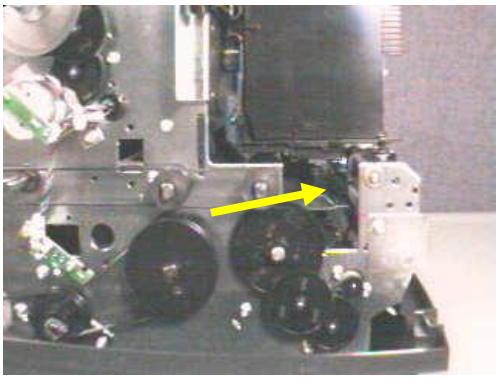




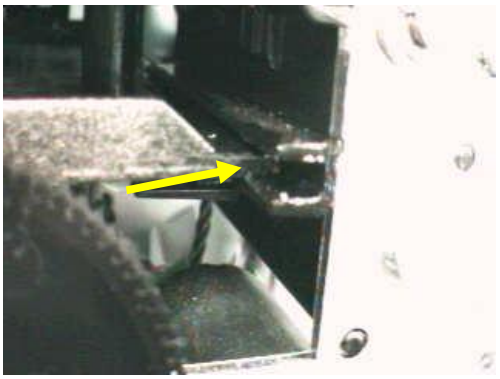
Installing the new Card Input Hopper in the dual Hopper units (DTC515/525) (continued)

Step	Procedure
3	Slide the Card Input Hopper to the left to remove it from the Track.
4	Remove the second Hopper (see Steps 2 and 3 in this same procedure).
5	Locate and install the new Card Input Hopper 2 (D850253-02).
6	a. Install the new Hopper by sliding it toward the back of the Printer. b. Ensure that the plastic Guide is set along the Track. See below.

Continued on the next page



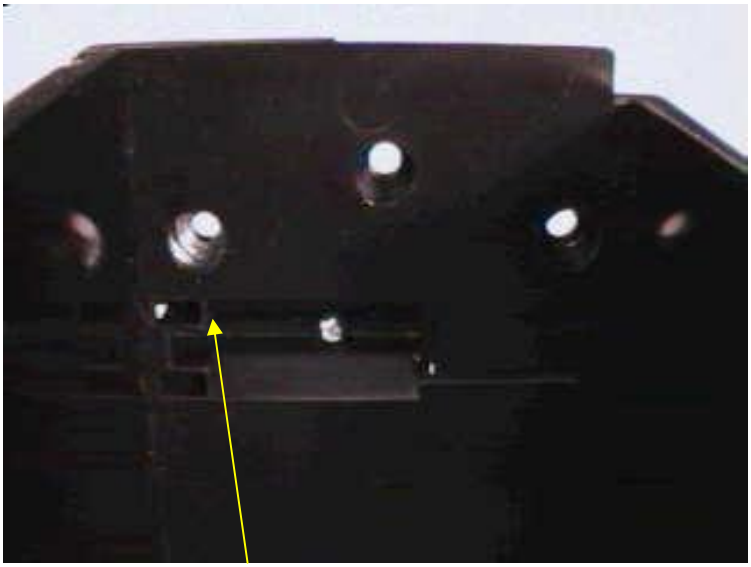
See (above) the Hopper Track.



See (above) the Hopper Track.

Install the new Card Input Hopper in the dual Hopper units (DTC515/525) (continued)

Step	Procedure
7	a. Confirm that there is a small metal washer in the left hole (toward the front of Printer) of the three (3) Card Input Hopper screw holes. See below. (**Note:** It should be captured within the plastic molding of the Card Input Hopper.) b. If the washer is missing, use the washer from the old Hopper.
8	Replace the three (3) screws that hold the Card Input Hopper to the Frame. **Caution:** Do not tighten these screws.
9	Install the Hopper 1 as described above.
10	Press down on the top of the Card Input Hoppers to apply a bias toward the bottom of the Printer. (**Note:** This ensure the Hoppers are seated properly.)
11	While holding the Card Input Hoppers down, tighten the three (3) screws.
12	Discard the old Card Input Hoppers.



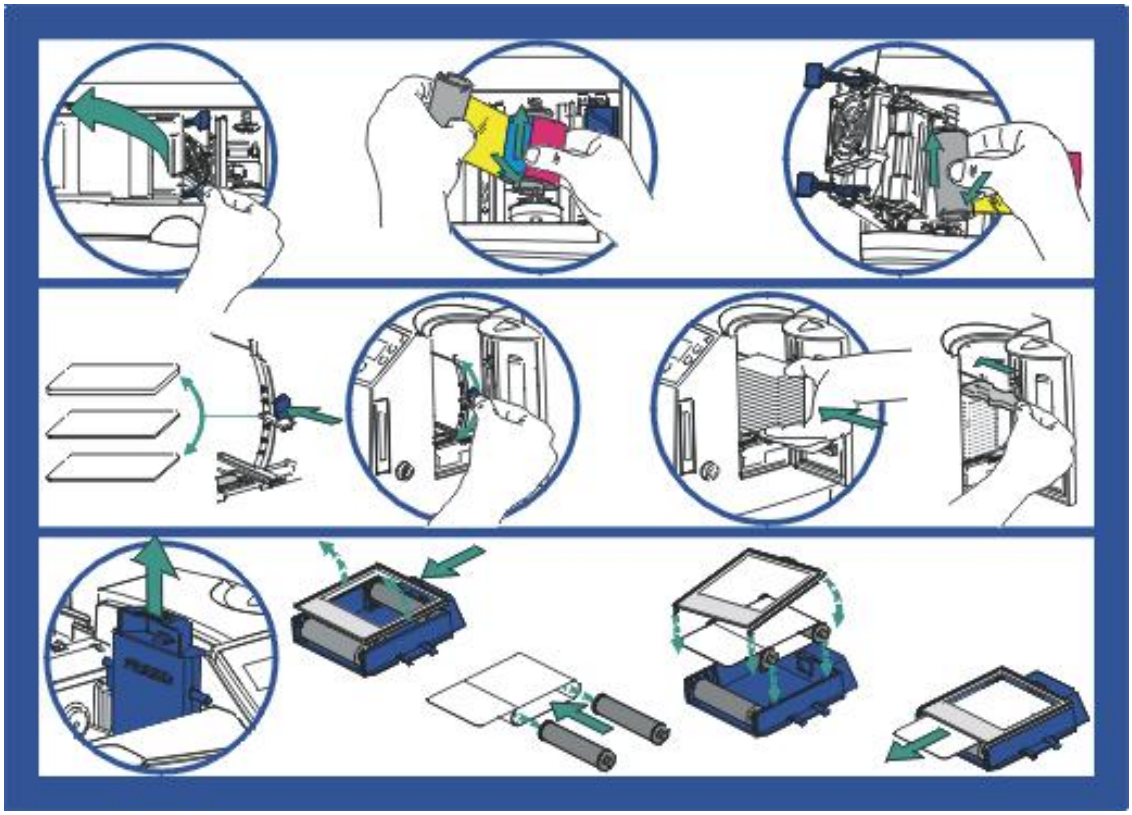
See (above) the hole with the washer.

Applying the Close Door While Printing Label (L000188)

Step	Procedure
1	Apply the **Keep Door Closed While Printing** Label (L000188) to the inside of the Input Hopper door, as shown below.

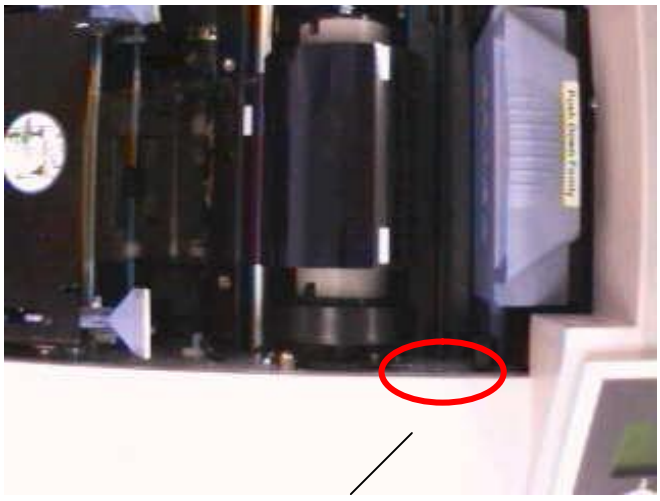
Applying the Ribbon Loading Label (L000108)

Step	Procedure
1	Apply the **Ribbon Loading** Label (L000108) to the inside of the Top Cover directly over the existing label. See below.



Replacing the plastic Printer casing

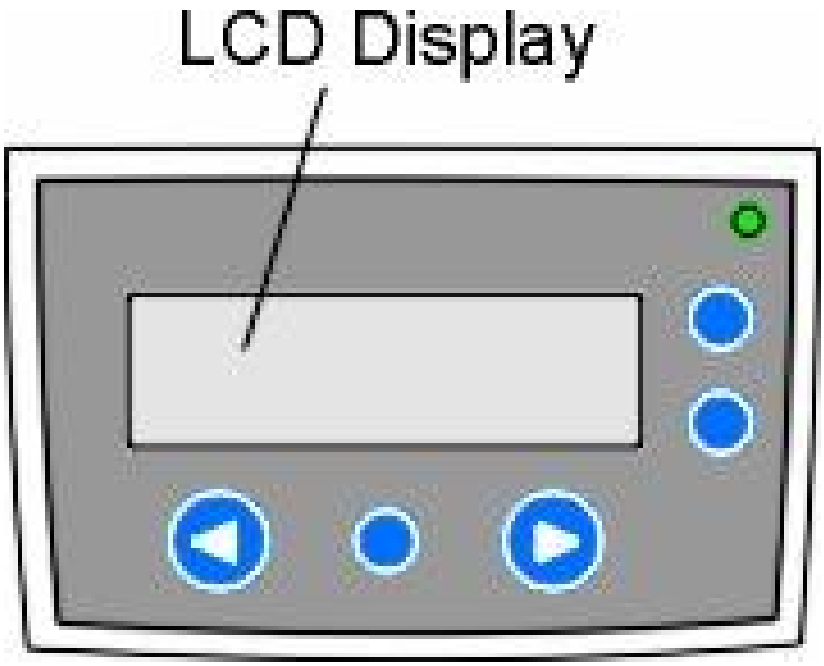
Step	Procedure
1	Plug the LCD control panel in to J18 of the Main Circuit Board.
2	Replace the ground strap onto the Spade connector above the Power Supply casing.
3	Confirm that wires are still firmly routed through the Cover.
4	On the Main Cover, open the Card Input Hopper Door to allow for clearance.
5	Set the casing back onto Printer.
6	Confirm that all wires are inside the casing.
7	Press the Cover down until the four (4) corner latches are secure.
8	Replace the two (2) screws that hold the casing on the Frame. a. Place the screws into the holes and partially tighten them. **Caution:** Do not tighten them completely. b. Align the top edge of the casing with the edge of the Printer side plate. c. Tighten the two (2) cover screws to hold the casing in place. (**Note:** This should be done while holding the front of the main casing even with the Printer's front side plate. See below.)



Align the Cover with the Side Plate.

Powering up the Unit and confirming its Ready status

Step	Procedure
1	Load the YMCKO Ribbon into the Printer.
2	With the Power Switch turned OFF, insert the Power Cord into the Power Port, located on the back of the Printer.
3	Insert the other end of the Power Cord into an available outlet.
4	Connect the Printer to PC using parallel cable.
5	Press or turn ON the Power Switch to the Printer. (**Note:** Once the Printer's start-up sequence is completed, the LCD should read READY.)



Upgrading the Firmware to Version 1.5.1

Step	Procedure
1	Prepare the Printer. a. Select **Menu** from the LCD Control Panel. b. Scroll down to the **Upgrade Printer** and hit **Select.** c. Select **Yes** when asked to continue with the Upgrade.
2	Install the Firmware Updater Program. (**Note:** Ignore this step if the program is already installed on PC.) a. Locate the Software Installation CD packaged with the Printer. b. Insert the CD into the Computer's CD drive. c. If the CD begins auto-play sequence, select **Exit** using the on-screen Menu. d. Select the **Run** command from **Window's Start Menu**. e. Click on the **Browse** button. f. Select **Setup.exe** from the **\Utilities\Firmware Updater** directory on the CD. g. Once selected, click on **OK** to run the set-up program. h. Follow the on-screen instructions to install the Updater utility.

Continued on the next page

Upgrading the Firmware to Version 1.5.1 (continued)

Step	Procedure
3	Prepare the PC. a. Insert the DTC5XX Firmware Update Disk into the Computer's Diskette Drive. b. In Windows, open the **Firmware Updater Program** from the **Windows Start Menu**, as shown below. c. Click on the **Select Update File** button, as shown below. d. Navigate to the **5DTC151.S19** Firmware file on the diskette. Select it and click on **Open**. e. Click on **Select Printer** button, as shown below. f. Select **DTC510-515/ DTC520-525** and click on **OK**.

Continued on the next page

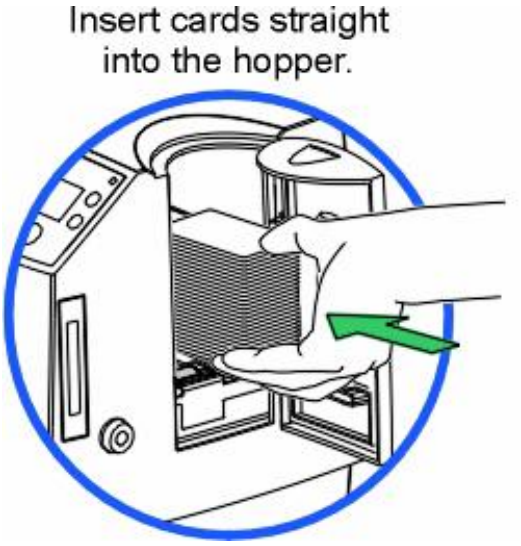
Upgrading the Firmware to Version 1.5.1 (continued)

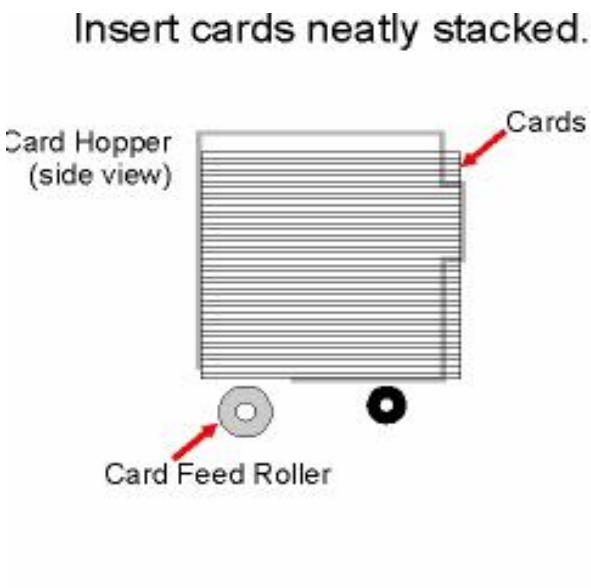
Step	Procedure
4	Start the Update. a. Go to the Printer LCD and select **Start**. b. Go to the PC and click on **Send Update.** (**Note:** The PC and Printer LCD will show update status as the Firmware is transferred.)
5	Finish the Update. (**Note:** Upon completion, the LCD will state **Upgrade Successful**.) a. Press the **EXIT** button and cycle the power to the Printer. b. Upon power-up, confirm that the new Firmware (Version 1.5.1) appears in the LCD window. c. Click on the **Exit** button to close the Updater dialog box.
6	a. If the **Update Failed** or **Update System Now** message appears, repeat the **Powering up the Unit and confirming its Ready status** procedure in this same document. b. If the failure persists, contact the FARGO Technical Support for assistance.

Confirming the Printer operations

Step	Procedure
1	Load the Cards into the Input Hopper(s), as shown below.
2	Place the Card Weight on top of the Input stack(s), as shown below.

Continued on the next page





Confirming the Printer operations (continued)

Step	Procedure
3	Confirm that the YMCKO Ribbon is loaded into the Printer.
4	a. Load a Cleaning Cartridge into the Printer, as shown below. b. Carefully cut the pack open. c. Remove the Cartridge if it is a new Printer with the cleaning cartridge still sealed in the supplies pack (mounted inside the box).
5	Ensure the Printer is connected to the PC.
6	Power-up the Printer and confirm that the Printer shows **Ready** on the LCD Control Panel.

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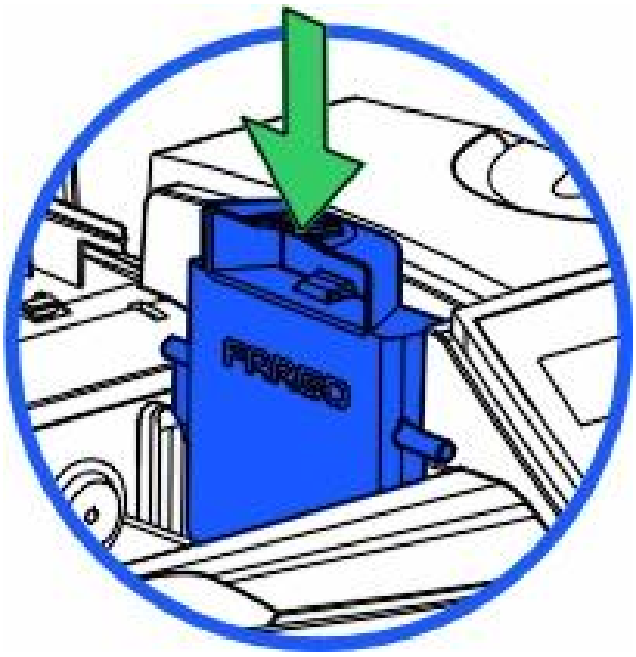

Confirming the Printer operations (continued)

Step	Procedure
7	Check for proper image alignment. See the next page for this procedure. a. From the LCD control Panel, select **Menu**, then **Print Test Image**, and then **Gray/Align YMC/K**. (**Note:** The Printer will print a self-test with an array of gray squares and alignment arrows along the edge of the card.) b. Use the arrows along the edge of the card to confirm the proper alignment, as shown below. (**Note:** The gray arrows should be evenly aligned along the edges of the card.) c. If the gray arrows are not aligned properly, adjust the arrows as needed. • **TOF (Top of Form):** This aligns the image to the leading edge of the card. (**Note:** A higher number will move print away from card edge, to the right, as viewed from the front of the Printer. A lower number will move print toward the card edge, to the left, as viewed from the front of the Printer.) • **EOF (End of Form):** This aligns the image to the trailing edge of the card. (**Note:** A higher number will move the print to the right adjustment to roughly match the TOF alignment arrows. A lower number will move the print to the left adjustment to roughly match the TOF alignment arrows.) d. After making changes through the LCD settings, print a Self Test in order to confirm the proper alignment. e. If the Ribbon breaks when printing, tape the Ribbon back onto the spool. (**Note:** Use the LCD controls to add +10 to the TOF value and begin the process again.) f. Repeat this procedure (as needed) until the proper alignment is achieved. g. Once this procedure is completed, make appropriate the TOF and EOF changes to the Settings sticker at the bottom of the Printer, using a permanent black marker.

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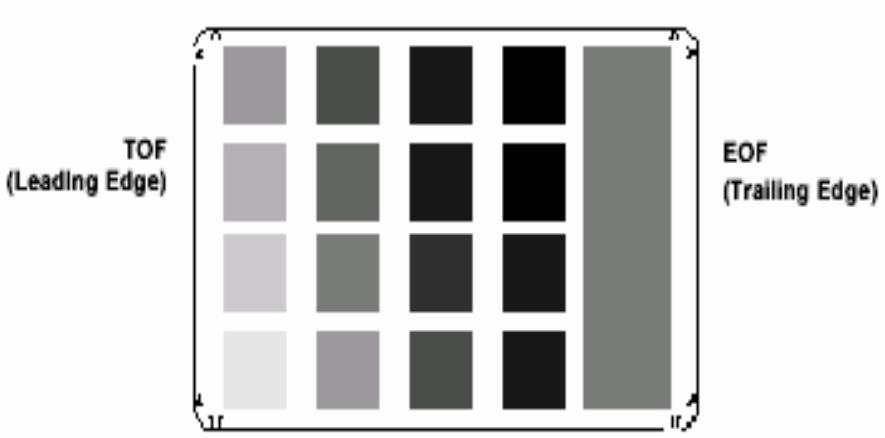
Confirming the Printer operations (continued)



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Confirming the Printer operations (continued)

Step	Procedure
8	Print the sample cards from the PC. a. From the **Windows Start Menu**, select **Settings\Printers** to open the **Printers** window. b. Double click on the **DTC510-515/ DTC520-525** Printer icon to open the driver window. c. Select **Properties** from the **File** menu to bring up the Driver Options window. See the next three pages to review the Print Drivers. • **Document Defaults** if in Windows NT. • **Printing Preferences** if in Windows 2000. d. Click on the **Test Print** button on the **Card** tab of the Driver options. (**Note:** The Printer will print a sample card.) e. Inspect the card to ensure proper image print and placement. f. Compare the card to the sample shipped with the Printer on the blue Quality Assurance Certificate for reference.
9	For Dual Hoppers, confirm the Hopper operation. a. From the LCD menu, select H1 and H2 to the alternate Hopper positions. b. Watch the Hopper movements to ensure the Hoppers are properly aligned. c. Using a graphics application, print the sample cards using the cards from both the Hoppers. d. Ensure that the Hoppers lift and move properly.

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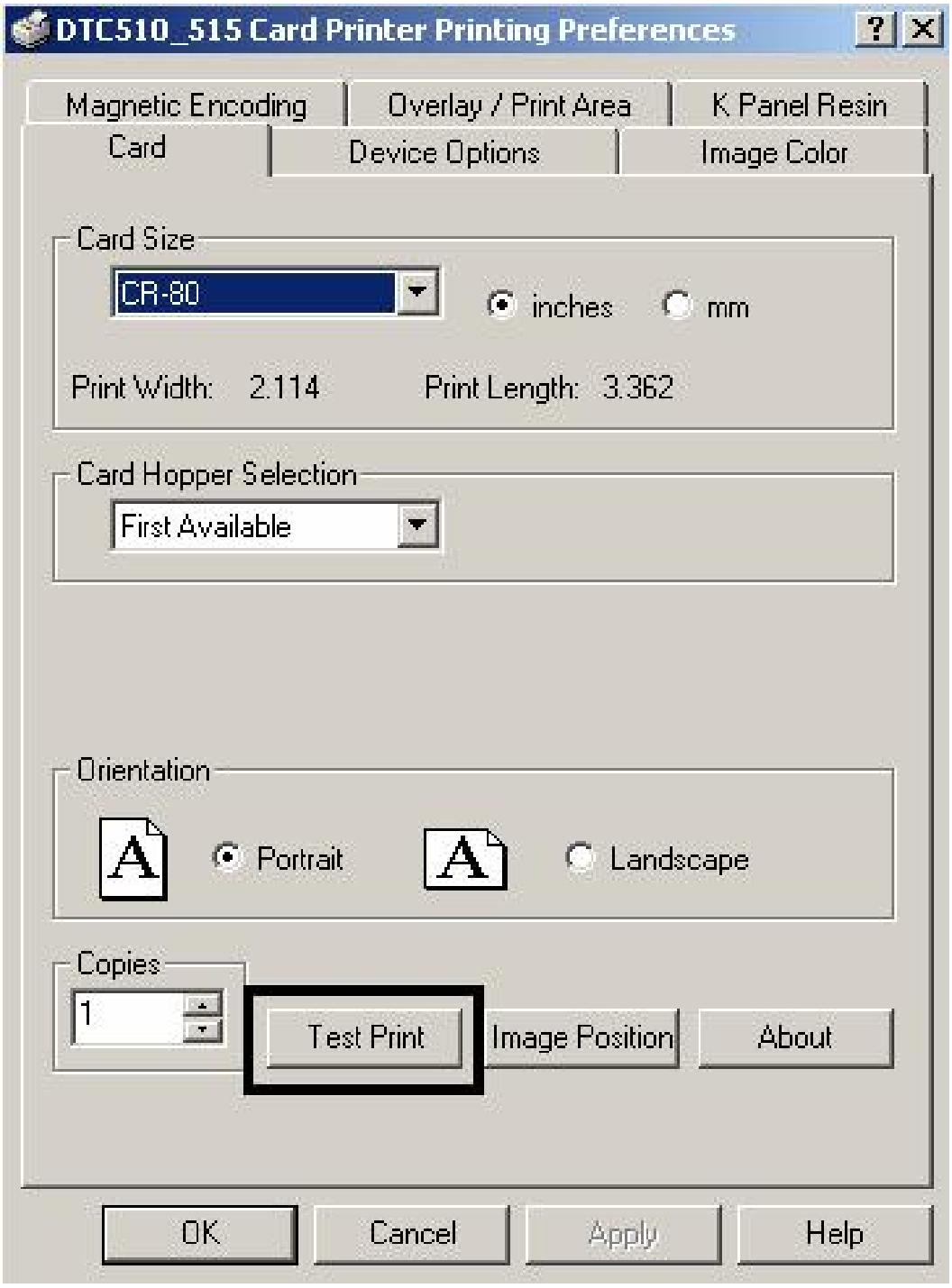
Confirming the Printer operations (continued)

See the previous procedure.



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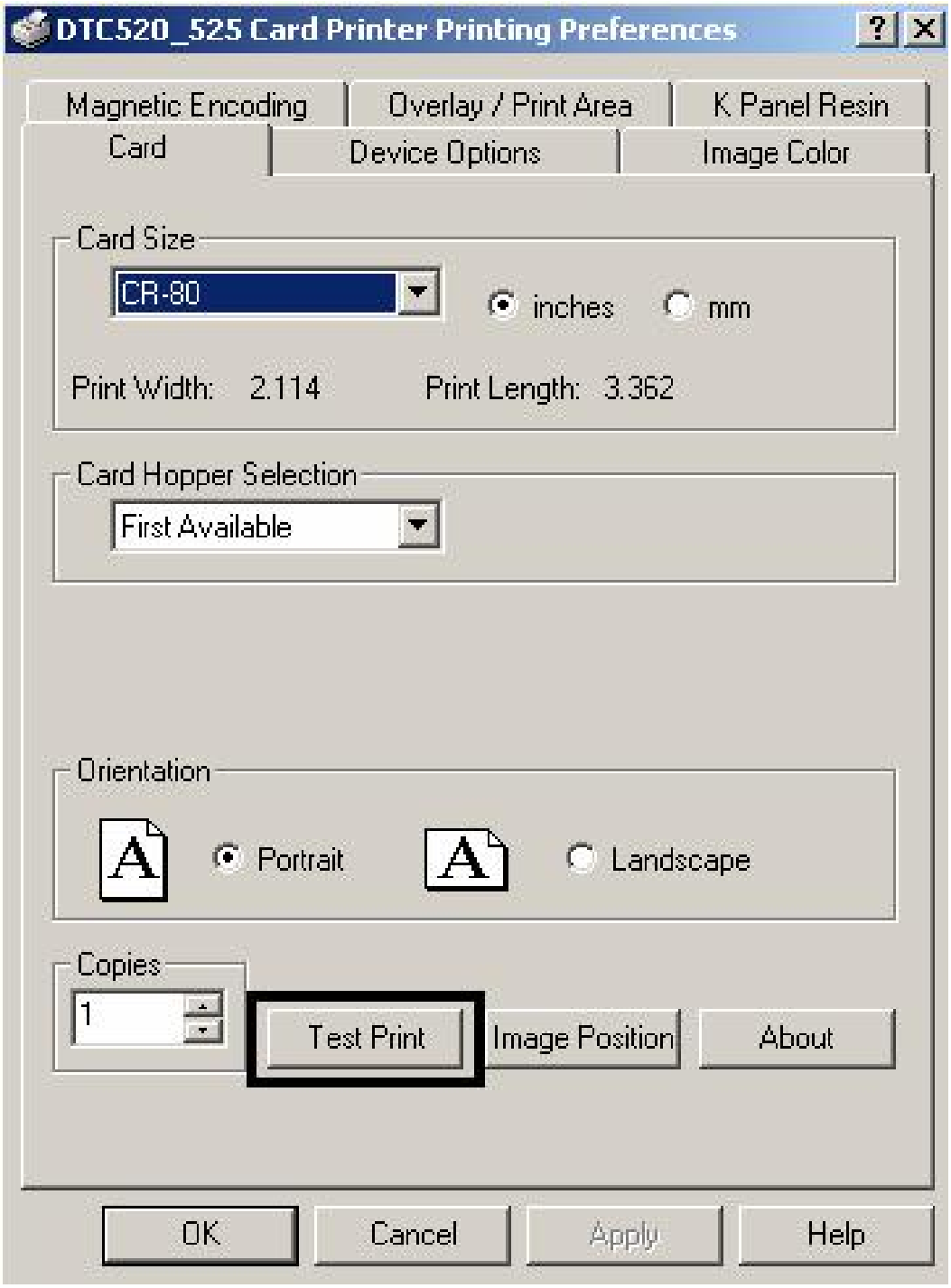
Confirming the Printer operations (continued)

See the previous procedure.



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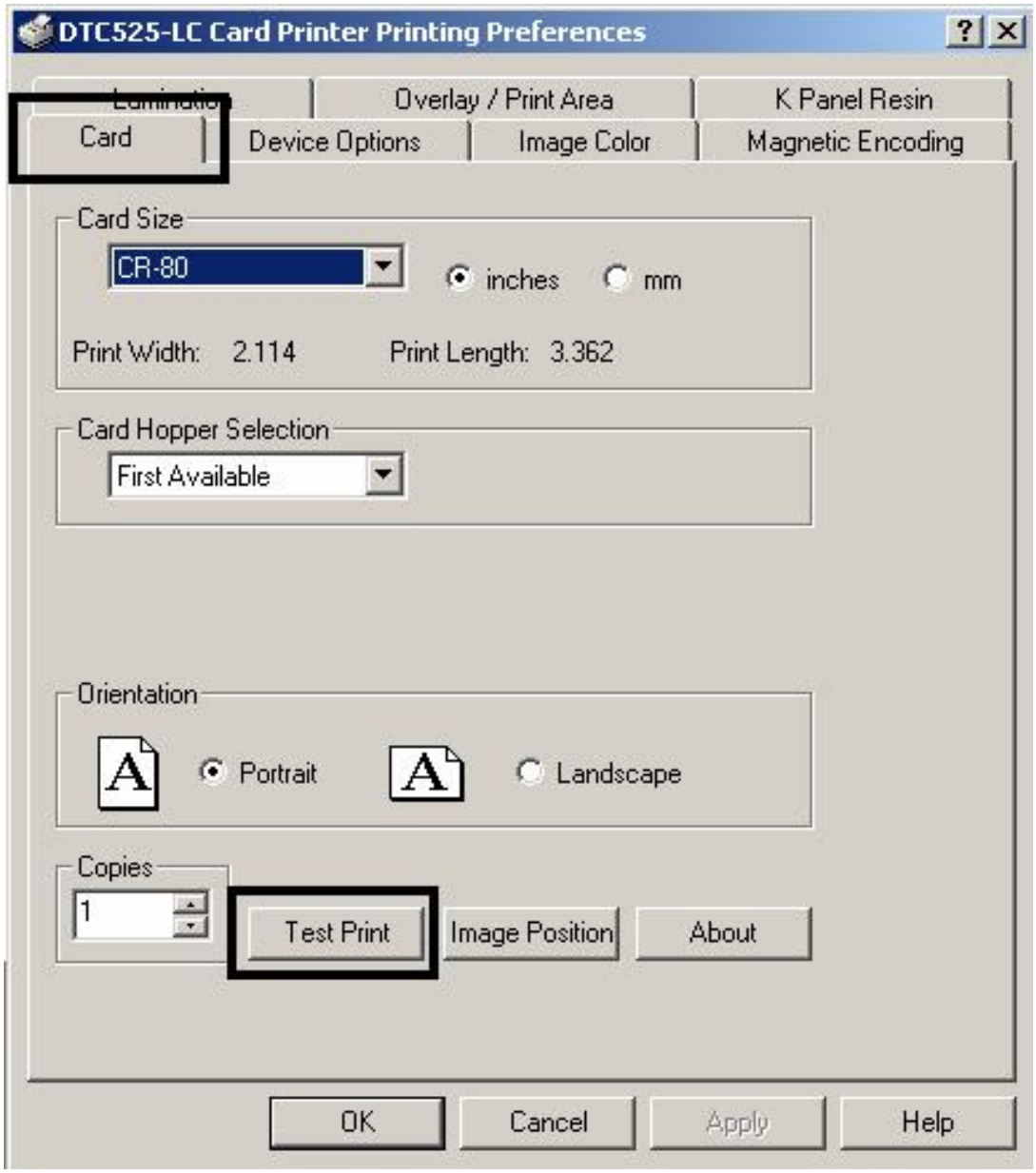
Confirming the Printer operations (continued)

See the previous procedure.



Removing the Media from the Printer

The following have now been removed from the Printer:

- Card Weights (D850448)
- Cards
- Print Ribbon
- Cleaning Cartridge

(**Note:** At this point, the Upgrade is complete. If repackaging the Printer for delivery, continue with to the next procedure.)

Repackaging the Printer

Step	Procedure
1	a. Discard the white Cleaning Cartridge Instruction sheet. Replace it with the yellow card. b. Insert this yellow card into the empty Cleaning Cartridge slot inside the Printer.
2	Set the blue Quality Assurance Certificate onto the Print Arm.
3	Tape all openings closed. a. Cover the Communication Ports with tape. b. Tape the Top Cover closed at two (2) locations. c. Tape the Output Tray in place.
4	Pack the new Cleaning Cartridge. a. Carefully cut open the supply pack on the bottom of the shipping box, if it is not already open. b. Remove the old Cleaning Cartridge. • Remove the cleaning Roller from the old Cartridge. Retain it as a spare Roller. • Discard the rest of the old Cleaning Cartridge. c. Place new cartridge (with the sticker and the liner applied) into the pack.

Continued on the next page

Repackaging the Printer (continued)

Step	Procedure
5	Replace the L000107 Quick Start Guide with the new Guide.
6	Replace the Installation CD with the new CD.
7	Carefully tape shut the supply pack after it is updated.
8	Package the Card Weights. a. Place the card weights into the poly bag (260176). (**Note:** Ensure there is one Card Weight per Hopper.) b. Place the bag with the power cords into the poly bag. c. Tape the poly bag closed.
9	Re-box the Printer. a. Carefully lay the Printer onto its front and pull on the poly bag. b. Carefully lift the Printer over onto its back, neatly fold the bag, and tape it to the bottom of the Printer. c. Carefully set the Printer on the Output end and place the foam onto the Input end of the Printer. d. Carefully flip the Printer over onto the foam and place the other foam piece onto the output end. e. Place the Printer into the bottom of the box. f. Load the Cord bag into the corner of the box next to the front Output side of the Printer (with the weights facing the box). g. Put on the Top Box, and insert both the Handles and the lock.

Section 11 Fargo Technical Support

The purpose of this section to provide the User with an efficient, step-by-step procedure to be used when contacting Fargo Technical Support as needed for the DTC500 series card Printer.

Contacting Fargo Technical Support

Step	Procedure
1	Read the suggested Sections of the Technical Service and Maintenance Manual in order to troubleshoot this Printer. As needed, contact the Fargo Technical Support Group for additional, technical assistance: • by phone at (952) 941-0050. **OR** • by fax at (952) 941-1852. **OR** Contact Fargo Technical Support via the Web: http://www.fargo.com/tech_support/contact_tech_support.asp
2	Position a phone near the Printer and Computer so Fargo technicians can help troubleshoot the Printer(s).
3	Please have a self-test and a sample card ready when calling Fargo Technical Support.

Reading the Serial Numbers on a Fargo printer

The purpose of this section is to provide updated instructions for reading serial numbers on a Fargo printer.

Finding out when a Fargo Card Printer was manufactured

You can determine when your card printer was manufactured by reading directly from the serial number (affixed to your card printer).

1. **Year Built:** The first two digits in the serial number indicate the year that the printer was manufactured.
2. **Week Built:** The second two digits indicate the week.
3. **Numeric Order:** The last four digits indicate the sequence number for the numeric order in which the printers were built.

Reviewing Example No. 1: Serial Number 80453289

1. **80453289:** The first two digits in the serial number indicate the year the printer was built (e.g., the digits 80 indicate the year 1998).
2. **80453289:** The third and fourth digits in the serial number indicate the week the printer was built (e.g., the digits 45 indicate week 45 of that year).
3. **80453289:** The last four digits indicate the sequence number for the numeric order in which the printers were built.

Reviewing Example No. 2: Serial Number A1280224

1. **A1280224:** The first two digits in the serial number indicate the year the printer was built (e.g., the letter and digit A1 indicate the year 2001).
2. **A1280224:** The third and fourth digits in the serial number indicate the week the printer was built (e.g., the digits 28 indicate week 28 of that year).
3. **A1280224:** The last four digits indicate the sequence number for the numeric order in which the printers were built.

Section 12 Reviewing Spare Parts Lists

Reviewing the Spare Parts List for DTC 500 Series Card Printer

DTC5xx Series ID Card Printer
Recommended Spare Parts List
Effective Date: April 2004
For current pricing see http://www.fargopartner.com/support_services/

Reviewing the Spare Parts List for the DTC500 LAM

DTC500 LAM Spare Parts List
Recommended Spare Parts List
Effective Date: April 2004
For current pricing see http://www.fargopartner.com/support_services/

Glossary of Terms

Term	Definition
24-bit color	A color depth for an image that uses 8 bits for each color (red, blue, green) combining the possible 256 shades to provide a color depth of 16.7 million colors.
AC - Alternating Current	An electrical current that reverses its direction at regular intervals (typically 50 - 60 times a second).
Access Card	The card for the SmartGuard security system. A cared with embedded electronics that can be removed from the Printer, locking the Printer and preventing unauthorized use.
Adhesion	The firm attachment of a material to the card surface, confirmed by using the Tape Test -pulling an applied piece of adhesive tape (Scotch 600 or equivelent) off the card at 1 sec/in to see if any material is pulled off by the tape.
Algebraic	A type of color matching that takes the colors value of pixels and applies them to an algebraic equation to adjust the levels of hue, saturation and brightness.
ANSI (American National Standards Institute)	The United States Representative to ISO, providing standardization for U.S. Manufactures prior or in addition, to acceptance by ISO.
AS400	An IBM operating system running on a main frame. DTC500 Fargo Printers are built with fonts saved in the Printer memory so users of AS400 can write escape codes and print from the Printer.
ASCII (American Standard Code for Information Interchange)	A standard for processing information in computer processors. An 8-bit character set of 255 decimal numbers, each assigned to numbers, letters, punctuation and special characters.
AT	Refers to an IBM standard in early computing with regard to the chipset and function of the Parallel Port, set up in the BIOS.
B (Black)	Black Dye-Sublimation panels are distinguished from the black panel using resin by the use of B for Dye-Sublimation black. K denotes resin black.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Barcodes	A series of alternating black and white stripes, of varying widths (each character denoted by a set number and width of black stripes) that allows characters to be optically read by a computer.
batch print	A file sent down from the computer that contains commands to print a number of cards, sequentially.
Battery Back-up	A power supply that can keep AC electronic equipment running for a short time when power is interrupted, allowing enough time for the user to save data and close the machine properly.
Bi-directional	A communication standard that allows two-way data transfer between PC and Printer.
BIOS (Basic Input/Output System)	The part of the operating system in a computer that handles communication between the PC mainboard and its peripherals. Typically residing in chip-based, non-volatile memory.
Bit	An abbreviation for binary digital. Each bit is an element of information that can have two states: off and on.
Bit map	A graphic produced by an array of pixel elements with the color hue, brightness and saturation information stored in bits. The more bits, the more values and thus the greater variety. 1 bit color is black and white, 8-bit color produces 256 shades of gray and 24-bit color can produce 16.7 million colors.
Board	A term used for the circuit board, a hard mylar plate made of many layers, that holds the electronic circuit elements and wire traces.
Boot-up	A series of operations that the Printer runs through when power is first applied including a series of initializing, status testing and a diagnostics program to ensure a ready state.
Buffer	A block of memory, in the Printer or PC, that holds print files until the processor is ready to print them.
Cable	A set of conductors wrapped together and often concealed within insulation, used for signal transfer from one device to another, with connectors on either end that allows the cable to be removed.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Cache	A type of memory Buffer to store data temporarily, used to hold information that is most often exchanged between contRoller and peripheral, to expedite data transfer.
Calibrating	A procedure to adjust an electro-mechanical device so that it operates within established parameters.
Cleaning Roller	High tack Rollers positioned just after the input hopper to lift debris off the card as it rolls over it. A clean card surface improves print quality.
CD (Compact Disc)	A 4.75 inch (12 cm) optical disk that stores data, written too and read from using a laser.
DMA (Direct Memory Access)	Channels designated within the Windows operating environment that are used for dedicated high-speed communication between the PC and the Printer port.
Centronics	A parallel communications interface that has become the standard for connections to Printers, designed by the Centronics Corp.
Coercivity	The property of a Magnetic Stripe that indicates the amount of force needed before magnetic saturation, measured in Oersted (Oe).
Color matching	The process of adjusting color hue, saturation and brightness, to duplicate a desired color. An algorithm within the driver, which adjusts the color balance and provides output with the desired color, automates this process.
Compressed air	Air stored in a tank or produced by an aerosol can, delivered by through nozzle at a high speed. Used in the Printer to blow out debris.
Contrast	The degree of difference in luminance of two areas.
Control panel	The panel on the Printer from which the user can control Printer functions. The Printer is usually composed of the control buttons and an LED or LCD display.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
CR-79	A card dimension standard of 2.0625" L X 3.3125" W (+/-0.002" W, +/-0.005" L) or 52.400 X 84.150 mm.
CR-80	A card dimension standard of 2.125" X 3.370" (+/-0.002" W, +/-0.005" L) or 53.975 X 85.598 mm.
CR-90	A card dimension standard of 2.375" X 3.625" (+/-0.002" W, +/-0.005" L) or 60.325 X 92.075 mm.
CR-100	A card dimension standard of 2.625" X 3.875" (+/-0.002" W, +/-0.005" L) or 66.675 X 98.425 mm.
Cursor	The marker in the LCD display Window that indicates the active selection.
Darkness	A reference to color saturation.
DB-9	A 9 pin, D-shaped connector, typically used in serial port interfaces.
DC Motor	A Motor that works on DC with continuous motion.
DC (Direct Current)	Electronic flow that is unidirectional, flowing from the positive (+) to negative (-) of a power source.
Default	A setting or parameter that comes preset from the factory in driver or Firmware. Performance parameters can be customized in the driver, but can be reset to the factory values usually through the push of the default button. The default values for the Firmware are usually denoted on a label attached to the Printer.
Defrag	Abbreviation for defragmenting. The process of reformatting data on a hard drive so that it uses space more efficiently.
DIP switches (Dual In-line Package Switches)	A small array of mechanical switches installed on the board that can be configured to change Printer operations including providing a variety of self-tests.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Direct-to-Card (DTC) Printing	The Direct-to-Card printing process prints digital images directly onto any plastic card with a smooth, clean, glossy PVC surface.
Dither	A system of distributing dots to control the hue, brightness and /or saturation. In monochrome printing, this controls the brightness. In color printing, Dithering can supply a larger color gamut than non-Dithering. In the driver, Dither modes can be selected to provide better image quality depending on the type of image to be printed.
Dongle	A peripheral that attaches to a port to act as a key for an installed application. The PC is able to run that application only when the dongle is installed. Typically, it works as a pass-through device and is connected in serial to the parallel cable.
Dot	The smallest unit of an image that the Printer is able to produce. The smaller the dot, see dot pitch, the sharper the image.
Dot pitch	A measurement of image sharpness denoting the width of the dots that makes up a pixel. The smaller the pitch, the sharper the image.
Download	The transfer of a data file from one device to the other over a network or cable, typically from the Internet to a PC.
DPI (Dot Per Inch)	A measurement of the Printer resolution indicating how many dots a Printer can produce in a linear inch.
DRAM (Dynamic Random Access Memory)	A microchip based volatile memory storage device. The Printer uses this to Buffer a print job, transferred from the PC, until the Printer contRoller is able to process the packet.
Driver	Software utility installed in Windows, that interfaces an application to rasterize image data and include command codes so the Printer can process the file.
Duplex Printing	Printing on the front and the back of the card.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Dwell Time	The speed at which the card moves across the lam Roller, measured in seconds/inch (sec/in). This can be adjusted in the driver to ensure adhesion and card flatness.
Dye Migration	The diffusion of dye out of the card surface and into another receptive surface, such as a vinyl pouch card holder, resulting in a faded image.
Dye-Sublimation	Also called dye diffusion/thermal transfer, it is the process of heating a dye suspended in a cellulous substrate until the dye can flow, diffusing into the dye receptive surface of the card or InTM. This produces the image in the surface of the card.
E-card	An abbreviation for electronic card. A generic term used to reference any card with built-in electronic devices such as Smart Cards or prox cards.
E-card Docking Station	The device in the Printer that accepts Smart Cards with an ISO Smart Card contact Station. This allows the user to write to the Smart Card chip with a standard RS-232 interface in the back of the Printer or with the optional built-in Encoder.
Edge-to-Edge	Refers to the maximum printable area on a card resulting in printed cards with virtually no border.
ECP Mode (Enhanced Capabilities Port Mode)	A type of Parallel Port mode, developed by Microsoft, to increase the port throughput and improve performance.
EE Memory	An abbreviation for EEPROM.
EEPROM (Electrically Erasable Programmable Read Only Memory)	A microchip based non-volatile memory storage device that can be rewritten in the field. The chip can hold new values as the Printer adapts its operational parameters.
Encoder (Smart Card)	An electro-mechanical interface to transfer data from the PC to a chip or Magnetic Stripe built into the card.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Encoder (wheel)	An electromechanical device, attached to a shaft that detects the change in rotational position, incremented to count ticks per revolution. The Printer's Encoder wheel both detects motion and measures the amount of rotation in the movement of the Ribbon.
Engine	A generic term for a collection of systems and mechanisms that is dedicated to executing a specific function. A Printer that also laminates would have both a print engine and a lamination engine.
EOF (End Of Form)	The trailing edge of the card, detected to indicate when the Printer should stop printing.
EPP (Enhanced Parallel Port)	A type of Parallel Port mode, developed by Intel, to increase the port throughput.
EPROM (Electronically Programmable Read Only Memory)	A microchip based non-volatile memory storage device that cannot be rewritten in the field. Firmware for many Fargo Printers is stored on these chips and so a change of the chip is necessary for an upgrade.
Escape sequence	A string or control character that indicates to the processor that what follows is a command and not data.
ESD (ElectroStatic Discharge)	The discharge of static electricity (high voltage, low current) that can damage electronic devices.
Ethernet	A system of networking a series of computers for the sharing of data or peripherals.
Film	A thin flexible transparent sheet used to carry dye-impregnated material or resin to be transferred to the card.
Firmware	The instruction set, stored in chip memory, inside the Printer that controls functional and operational data. Some models require a chip change for updates; some Firmware can be changed by reprogramming from the PC.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Flash Memory	A microchip based non-volatile memory device that holds its data when power is removed. This allows for field reprogramming of the Printer commands, such as Printer Firmware upgrades, without the necessity of changing chips.
Font	A character set similar in style and form. Fonts can be graphical or mathematical constructs, represented by a series of dots or an assembly of curves and lines.
FPGA (Field Programmable Gate Array)	A microchip with configurable logic circuits installed that is programmed to act as the Printer's central processor.
Full bleed	Printing that covers the entire card surface.
Gamma	The degree of contrast of an image or the display of a monitor determined by the slope of a characteristic curve relating optical density to relative log exposure.
Glossy/Matte	A smooth polished surface in comparison to a rougher matte surface. Fargo matte cards have a surface index (Ra) of approximately 65 microinches while glossy have a Ra = 3.
Glossy PVC	A card made of PVC with a smooth polished surface (Surface roughness of approximately 0 - 10 micro-inches). This is required for direct to card Dye-Sublimation printing.
Graphical Device Interface (GDI)	A Windows standard for protocol between drivers and applications and the Windows interface. An application uses a driver to rasterize the data in the format necessary for the Printer but also for the Windows interface to execute the print commands.
Gray Scale	A graduation through the various brightness levels from white to black.
Halftoning	A process in monochrome printing that simulates continuous tone by using changes to the distribution of single dots. Increasing the number of dots in a given area increases the darkness even though the individual dots stay the same size.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Hard Drive	A high capacity storage device in a PC consisting of non-removable magnetically encodable platters.
Hardware	Physical components of a system such as the Printer, the PC, the power supply.
HDP (High Definition Printing™)	The High-Definition Printing process prints full-color images onto clear HDP transfer film (InTM). The HDP film is then fused to the card through heat and pressure via a heated Roller. The Printhead is capable of 256 shades with a sharper print and better color match.
Head	Abbreviation for Printhead.
Heat sink	A device used to dissipate heat into the ambient.
Heat Seal	A resinous film transferred by the Printhead onto the back of an HDP intermediate transfer film to facilitate adhesion.
HiCo (High Coercivity)	The Coercivity value of magnetic media between 2500 - 4000 Oe (ISO 7811-6). Fargo's High Coercivity encodes at 2750 Oe.
HTML (HyperText Markup Language)	A standard protocol used to format text files for use in a browser or on the Internet.
HTTP (HyperText Transfer Protocol)	A standard protocol by which computers can transfer data, compatible through multiple platforms.
IC (Integrated Circuit)	An electronic device that contains many individual circuits interconnected and placed within a discrete package.
ID (Identification)	An abbreviation for identification.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
IEEE 1284 (Institute of Electrical and Electronics Engineers 1284)	A standard method of signaling for a bi-directional parallel interface on personal computers. To ensure proper Printer communications and image output, Fargo recommends a parallel interface cable that complies with this specification.
Image	A collection of pictures or graphical elements that compose the visual features on a card. Also refers to the digital representation.
Input	Any data or material being transferred to the Printer.
Input Hopper	The area of the Printer that stores the blank cards, ready to print.
Intermediate Transfer Media (InTM)	A thin flexible material coated with a resin material into which the dye is transferred from the Ribbon by the Printhead. The film is then transferred to the card surface by the hot lamination Roller.
ISO	For the Greek, "iso", meaning same. Used to represent data from the International Organization for Standardization.
JIS II (Japanese Industrial Standard)	The standard for encoding to a Magnetic Stripe provided by the Japan Standards Association. The single track is as wide as ISO tracks 1 and 2 combined and in the same approximate location as those tracks but on the front of the card. The Coercivity level is 600 Oe.
K Panel	An area of a multicolored Ribbon (e.g., YMCK) that contains black resin for transfer to the card surface. Also used in reference to the application of preference to items printed on the card - those using the black panel in lieu of a process (YMC) black.
Lamination	The application of a film or resinous substance, fused by heat and pressure, to the surface of a card.
LAN (Local Area Network)	An array of several computers connected through a series of data transfer cables for the sharing of data and peripherals.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Landscape	A document layout that is viewed with the document's long axis in a horizontal orientation.
LCD (Liquid Crystal Display)	A device that contains a liquid crystal between two pieces of polarized film through which reflected or ambient light can pass. When a current is applied, the liquid's polarity changes and blocks the passage of the light resulting in an opaque area of the display. The areas are arrayed to form characters.
LED (Light Emitting Diode)	A semiconductor that emits light when a current is applied.
Media	A generic reference to anything onto which the Printer can transfer an image including cards, Ribbon and film.
LoCo (Low Coercivity)	The Coercivity value of magnetic media between 250 - 600 Oe (ISO 7811-2). Fargo's Low Coercivity encodes at 300 Oe.
LPT Port (Line Printer Port)	The system abbreviation for a PC's parallel Printer port.
Mag encoding	The process of orienting successive magnetic bits to produce a serial data string.
Mag stripe	An area of the card with an applied or impregnated ferrous material that can hold encoded data through a series of prescribed polarity changes.
Mag Track	An area of a magnetic strip running the length of the card, with a given width and position, constitutes a track. This is the area dedicated to one data string, restricted to specific rules of format. ISO standards specify three Magnetic Tracks on the back of a card. The JIS standard specifies one track on the front.
Mag Verify	A process to confirm proper magnetic encoding. After encoding, the information is read off back and compared to the intended string.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
MB (Megabyte)	A unit of storage that equals 1,048,576 bytes.
Memory	A generic term for any device that stores digital information using magnetic media or digital chip storage device.
Menu	A descriptive list of headings above nested functions that aid navigation to a specific operation. These are found in computer applications, with the heading at the top of a subset of like functions. They are also on the Printer LCD control panel.
Monochrome	An image composed of a single color.
Network	A series of computers connected by data transfer cable for communication and sharing of functions and peripherals.
Oersted (Oe)	The unit of magnetic field strength named after Dutch scientist Hans Christian Oersted who found the science of electromagnetism.
Offset	The prescribed distance between a reference point and the target point. The offset in card printing can refer to the position of the image relative to the leading edge or the distance of the start of magnetic encoding from the leading edge of the card.
O-Ring	A rubber ring used as a belt in several media driving applications.
OS (Operating System)	The instructions installed on the computer hard drive that run the computer's operations and applications. The driver used for any given OS will differ from other platforms. The correct version driver must be loaded for the Printer to interface with the OS and the application to print.
Output	Any product of the Printer including card image, encoded data and lamination.
Output hopper	The portion of the Printer that accepts the completed cards.
Overlay	A resin-like substance that is transferred by the Printhead to the card surface over a printed dye image to prevent image fading, increase abrasion durability and prevent dye migration.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Oversized Cards	Oversized cards are used for more efficient visual identification and are available in many non-standard sizes. The most popular sizes are CR-90 (3.63" x 2.37"/92mm x 60mm) and CR-100 (3.88" x 2.63"/98.5mm x 67mm).
Overlaminate	Protective clear or holographic material to increase security and durability applied over the printed surface with a hot Roller.
Parallel	A method of data transfer in which serial data is divided into sections and sent simultaneously down parallel wires to speed transfer rate.
Parallel Port	A communication socket on a device that allows for parallel data transfer.
PC (Personal Computer)	A stand-alone, programmable, electronic device that can store, retrieve and process data consisting of a CPU, mouse, keyboard and monitor.
PCB (Printed Circuit Board)	A solid, multi-layered plate on which electronic elements are attached, either through the board or on the surface.
Peel	The removal of a film or Ribbon from a card surface (at a perpendicular angle) to ensure proper transfer, then separation, from the card surface.
Peel-Off	A bar on the lamination section that holds the film at the correct position and provides proper peel angle.
Peripheral	Any device that is attached externally to a PC. These often share the same data cable or port as a Printer and can be the source of communication problems.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Pinch Roller	A free spinning (non-driven) Roller that presses the card against the drive Roller, on the opposite side, to ensure an adequate normal force for proper traction.
Pixel	Short for picture element. The smallest element of a graphic.
Platen	The hard rubber Roller that drives the media through the Printer, providing support to the backside of the media during printing or laminating.
PET	Abbreviation for polyester terephthalate, often called polyester. Sheets of PET are laminated with sheets of PVC to produce thermal acceptance composite cards.
Port	A communication interface, serial or parallel, used for the transference of data.
PolyGuard Overlaminate	A 1-mil or .6-mil thick polyester material that enhances card security and durability applied over the printed surface with a hot Roller. Available as clear or with embedded holographic-type security images.
Portrait	A document layout that is viewed with the document's long axis in a vertical orientation.
Potentiometer	An electronic resistor with a variable resistance value that can be mechanically set.
Print Driver	A software utility that serves as an interface between the Printer and the Windows GDI (Graphical Device Interface), making the Printer's functions available through the software application. It also provides the format information for the rasterizing of the print file including any necessary escape or function commands.
Print Job	A file of one or more cards for the Printer to print, including image data and Printer functions, transmitted through the parallel interface and at times stored temporarily in the print Buffer and spooler.
Print Server	A device used to connect and control a Printer on a network.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Printhead	The device on a Printer that produces the image on the media.
PVC	Abbreviation for polyvinyl chloride, often called vinyl. PVC is the component of the 0.002" thick clear, dye receptive film on the surface of the identification card and is the primary component of the identification card cores.
Queue	A sequence of files or sets of data, awaiting transmission or processing.
Proximity (“Prox”) Card	Proximity cards allow access and tracking utilizing contactless technology, usually by communicating through a built-in antenna.
Prox Card Encoder	The Fargo prox card Encoder uses an HID ProxPoint® Plus reader mounted on the e-card docking Station inside the Printer/Encoder. The ProxPoint is a "read only" device producing a Wiegand signal that is converted to RS-232 using a Cypress Computer Systems CVT-2232. Application programs can read information from HID prox cards via a RS-232 signal through a dedicated DB-9 port on the outside of the Printer labeled "Prox."
RAM (Random Access Memory)	A storage device for digital information to be held temporarily, to facilitate processing.
Rasterize	The process of converting the elements of a graphic into a bitmap to be printed.
Reboot	Cycling the power to the Printer so that it resets and reinitializes.
Registration	The quality of the alignment of the separate primary-color images: YMCK.
Resident Font	A set of characters loaded into the Printer memory that can be programmed to print those characters on the card without rasterizing the image.
Resin	A semi-solid material.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Resolution	The number of individual pixels in a graphic, taken over a given length, used to indicate the sharpness of the picture and the level of detail. The number of elements in the Printhead determines Fargo Printer resolution.
RFI (Radio Frequency Interference)	Electromagnetic waves radiated by poorly shielded cables or electronic devices that interferes with the operation or data transfer of another device.
RFID (Radio Frequency Identification)	This is a way of transmitting information via radio frequency. Data is sent from an RFID transceiver to an RFID tag (that is embedded in a Resin Ribbon).
RGB (Red/Green/Blue)	The three primary colors of the luminance or additive, model. Combinations of these three colors can produce practically all the colors of the spectrum that humans can detect. Computer monitors operate on an RGB model.
Ribbon	The dye impregnated film that is used for color printing.
Ribbon cable	Parallel wires held flat in a row by plastic insulation.
RibbonTraq	A Fargo Electronics method of placing bar code-like marks on the transition area between color panels. These marks are arranged for detection by a reflective Sensor array for the identification of Ribbon type and the Ribbon position.
RMA number (Return Merchandise Authorization number)	A number, acquired from Fargo Support, which authorizes the return of merchandise for repair or credit.
Roller	Elements of the Printer used for the transport of media consisting of a rotating steel shaft (for Ribbon) or a rotating steel shaft with a rubber cylinder installed at the shaft midpoint (for moving cards).
RS-232	An interface standard, established in 1969 by the Electronic Industries Association, regarding the connecting of computer peripherals.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Saturation	A measure of the degree of color, from gray, with the same brightness.
Self-test	A pre-determined print file used to confirm Printer operation typically sent from the driver or stored in the Printer's memory.
Sensor	An electro-mechanical/electro-optical device used to indicate a change in state in the Printer such as when a card reaches a certain location.
Serial communications	The transfer of data, one bit at a time and in sequential order, using a single wire.
Serial interface	A sub D 9 pin input/output port on the Printer, used for serial communication with the PC for AS400 operating systems or for e card encoding.
SIMM (Single In-Line Memory Module)	An array of memory chips, attached to a printed circuit board that installs in a slot on the main board.
Simplex	Single-sided printing.
SmartGuard	An application from Fargo Electronics that allows users to prevent access to the Printer through the use of a personally encoded Smart Card.
SmartGuard™	SmartGuard is a Printer security option that uses a custom access card and a built-in reader to restrict Printer access. Only a valid access card can enable the Printer to print cards.
SmartShield™	This option allows the Printer to print custom, security images on the card that reflect under a black or UV light source.
Smart Card	Smart cards have an embedded computer circuit that contains either a memory chip or a microprocessor chip. There are several types of Smart Cards: Memory, Contact, Contactless, Hybrid (Twin), Combi (Dual Interface), Proximity and Vicinity.
Software	Instructions saved in computer memory that directs the computer to perform certain tasks and functions.
Spooler	A computer application that allows the spooling of print jobs.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Spooling	Rather than moving a print job directly to the Printer, the job is written to the disk so that the user can access the application faster while Windows takes care of printing in the background.
SS (Start Sentinel)	The character denoting the end of a magnetic data string.
Stacker	The device that moves the finished cards onto the output column or dering them First In, First Out.
Stepper Motor	A Motor whose shaft turns in discrete steps, rather than continuously.
String	A sequence of characters that form a line of data.
Surface mount	A method of mounting circuit elements onto the surface of a circuit board, attached at solder pads, rather than through holes in the board.
Surge Protector	An electronic device, placed in serial to the Printer's power supply, that prevents damage to the Printer from electronic surges and electrical current that is outside of the normal parameters.
Switch Box	An electromechanical device to which a user can connect several peripheral devices to the Parallel Port simultaneously, yet using the selector switch to designate the active port.
TAC	Thermal Acceptance Composite cards. Card stock produced by laminating sheets of PVC with sheets of PET for better thermal distortion resistance. Ultra III cards.
Temp file	A temporary file, generated automatically by Windows, to store the information for an active document. Windows should delete these files when the application is closed.
Test Print	A file stored in or generated through windows that is sent to the Printer to test basic functionality.
Thermistor	An electronic resistor on the Printhead with a resistance value that varies in proportion to the heat to which it is exposed.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
Thermocouple	A device for measuring temperature using a junction of two wires of dissimilar metals that produce a voltage when heated that varies proportionally with the temperature.
Thin Film Overlaminate	A 0.25-mil thick resin material that enhances card security and durability applied over the printed surface with a hot Roller. Available as clear or with embedded holographic-type security images.
Through-hole	A method of mounting circuit elements with the leads passing through holes in the circuit board and soldered on the opposite side.
Timeout	An interruption of a print job that occurs when a function is not completed in the time allotted by the operating system.
TOF (Top of Form)	The leading edge of the card, as it travels through the Printer.
Track	The area on a mag stripe designated to contain the magnetic data string.
Troubleshooting	The process of investigating and determining the cause of a problem.
TrueType (TT)	A font format that produces each character using a mathematical equation, rather than a graphical representation, resulting in a much sharper, cleaner image.
UltraCard	The Fargo brand of card stock recommended for use in Fargo Printers, with the necessary glossy surface and composed of PVC.
UltraCard III	The Fargo brand of card stock, recommended for use in Fargo Printers that laminate, with the necessary glossy surface and composed of PVC and PET to prevent heat distortion.
Update	The process of installing a new revision of software or Firmware to implement new changes to the Printer's command codes and procedures.

Continued on the next page

Glossary of Terms (continued)

Term	Definition
UPS (Un-interruptible Power Supply)	An AC power supply, typically powered by batteries, which provides temporary power to the PC or Printer during an interruption of the supply voltage.
USB (Universal Serial Bus)	A 1.5M/sec (12Mbit/sec) serial communication interface that can support 127 separate devices consisting of 4 wires: power, ground, data in and data out.
Virtual Memory	A technique used by Windows when chip memory is exhausted, in which data is written to the hard to hold data temporarily and support Window's operations.
Wrinkle	The appearance in the card image of wavy or arched lines, either colored or clear, caused by improper film or Ribbon tension.
YMC	The designation of colored Ribbon by the panels of color in the order in which they are printed: Yellow (Y), Magenta (M) and Cyan (C).
YMCK	The designation of colored Ribbon by the panels of color in the order in which they are printed: Yellow (Y), Magenta (M), Cyan (C) and Black (K).
YMCKH	The designation of colored Ribbon by the panels of color in the order in which they are printed: Yellow (Y), Magenta (M), Cyan (C), Black (K) and Heat Seal (H).
YMCKK	The designation of colored Ribbon by the panels of color in the order in which they are printed: Yellow (Y), Magenta (M), Cyan (C), Black (K), Black (K) (the second K is for backside, black only printing).
YMCKO	The designation of colored Ribbon by the panels of color in the order in which they are printed: Yellow (Y), Magenta (M), Cyan (C), Black (K) and Overlay (O).
YMCKOK	The designation of colored Ribbon by the panels of color in the order in which they are printed: Yellow (Y), Magenta (M), Cyan (C), Black (K), Overlay (O), Black (K) (used for backside, black only printing).

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